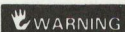


CB450N

STN/
cmg
14/9/20

WORKSHOP MANUAL CB450N

IMPORTANT SAFETY NOTICE



WARNING *Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.*

CAUTION: *Indicates a possibility of personal injury or equipment damage if instructions are not followed.*

NOTE: Gives helpful information.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains *some* warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda might be done or of the possibly hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized by the service methods or tools selected.

HONDA®

CB450N

HOW TO USE THIS MANUAL

This shop manual describes the servicing procedures for the HONDA CB450N.

Sections 1 through 3 apply to the whole motorcycle, while sections 4 through 18 describe parts of the motorcycle, grouped according to location.

Find the section you want on this page, then turn to the table of contents on page 1 of that section.

Most sections start with an assembly or system illustration, service information and troubleshooting for the section. The subsequent pages give detailed procedures for the section.

If you ignore the source of the trouble, go to section 20, TROUBLESHOOTING.

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MOTO HONDA DA AMAZÔNIA LTDA.
Service Publication Office

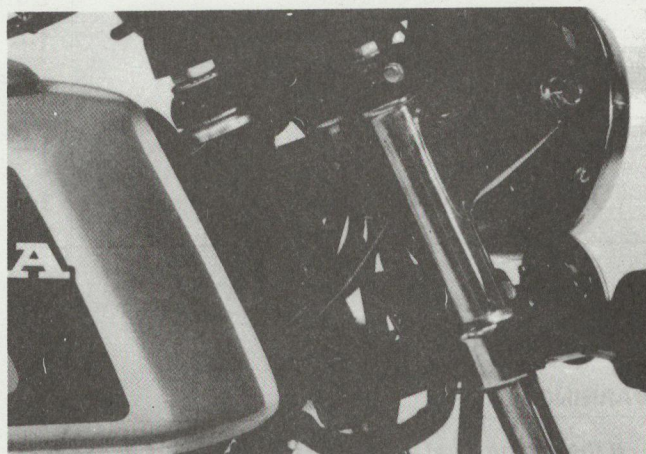
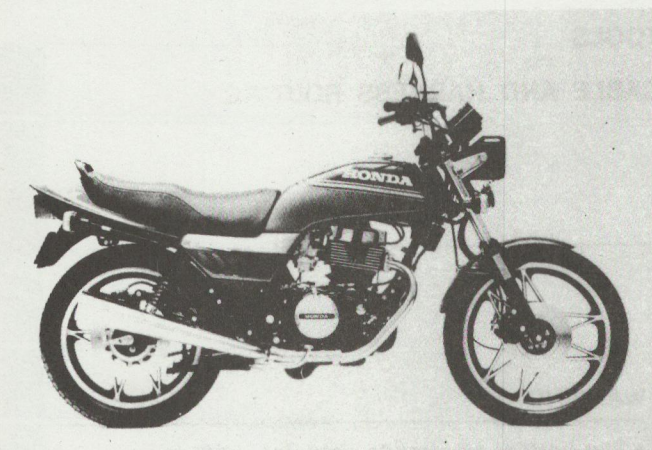
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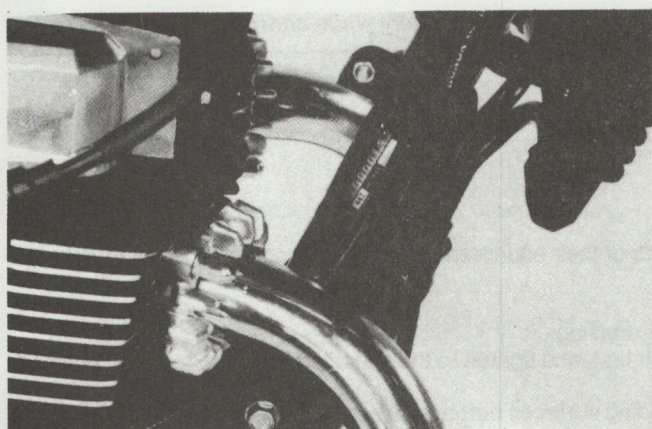
HONDA®

CB450N

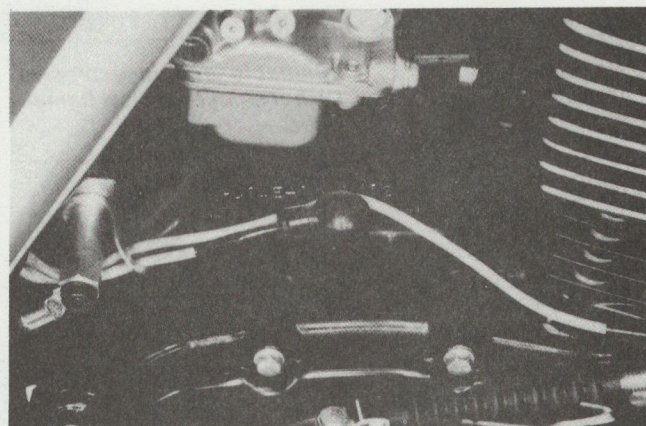
MODEL IDENTIFICATION



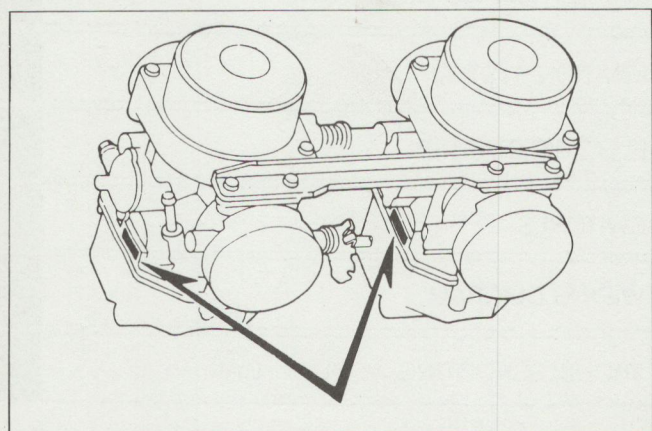
- The frame serial number is stamped on the right side of the steering head.



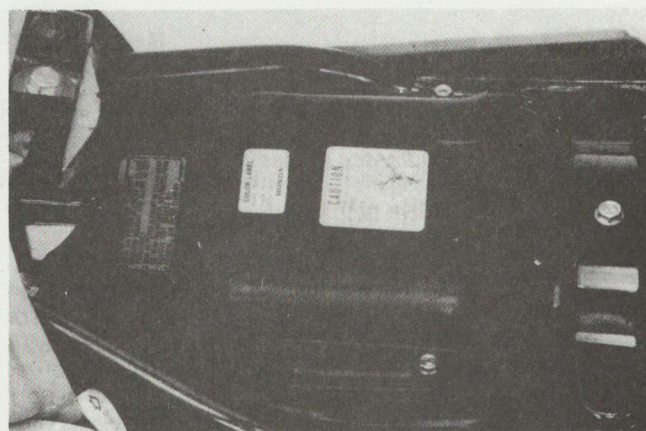
- The legal vehicle identification number (VIN) is on the right side of the down tube.



- The engine serial number is stamped on the top of the crankcase.



- The carburetor identification number is on the left of the carburetor body.



- The color label is pasted on the air cleaner cover under the seat.

1. GENERAL INFORMATION

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GENERAL SAFETY

WARNING

If the engine must be started for some work, make sure the area is well-ventilated. Never run the engine in a closed area. The exhaust contains poisonous carbon monoxide gas.

WARNING

Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.

WARNING

- *The battery electrolyte contains sulfuric acid. Protect your eyes, skin and clothing. In case of contact, flush thoroughly with water and call a doctor if your eyes were exposed.*
- *The battery generates hydrogen gas which can be highly explosive. Do not smoke or allow flames or sparks near the battery, especially while charging it.*

SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalent. Parts that do not meet HONDA's design specifications may damage the motorcycle.
2. Use the special tools designed for this product.
3. Install new gaskets, O-rings, cotter pins, lock plates, etc when reassembling.
4. When torquing bolts or nuts, begin with larger diameter or inner bolt first, and tighten to the specified torque diagonally, unless a particular sequence is specified.
5. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
6. After reassembly, check all parts for proper installation and operation.
7. Use only metric tools when servicing this motorcycle. Metric bolts, nuts and screws are not interchangeable with English fasteners. The use of incorrect tools and fasteners may damage the motorcycle.

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NOTE: Give helpful information.

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SPECIFICATIONS

ITEM		
DIMENSIONS	Overall length	2,070 mm (81.4 in)
	Overall width	845 mm (33.2 in)
	Overall height	1,134 mm (44.6 in)
	Wheelbase	1,390 mm (54.7 in)
	Seat height	795 mm (31.3 in)
	Ground clearance	170 mm (6.7 in)
	Dry weight	176 kg (388 lb)
FRAME	Type	Diamond type
	F. suspension, travel	Telescopic fork, 140 mm (5.5 in)
	R. suspension, travel	Swing arm, 97 mm (3.8 in)
	F. tire size, cold tire pressure	3.60 S19-52S, 225 kPa (2.25 kg/cm ² , 32 psi)
	R. tire size, cold tire pressure	4.10 S18-60S, 250 kPa (2.50 kg/cm ² , 36 psi)
	F. brake	Double disk brake
	R. brake	Disk brake
	Fuel capacity	17.5 liters (4.6 U.S. gal., 3.9 Imp. gal.)
	Fuel reserve capacity	3.5 liters (0.7 Imp. gal.)
	Caster angle	27°
	Trail	100 mm (3.9 in)
	Front fork oil capacity	135 cm ³ (4.7 ozs)
ENGINE	Type	Air cooled 4-stroke engine (oil cooler)
	Cylinder arrangement	Vertical and parallel twin cylinder
	Bore and stroke	75.0 x 50.6 mm (2.953 x 1.992 in)
	Displacement	447 cc (27.3 cu in)
	Compression ratio	9.1:1
	Valve train	Chain driven O.H.C.
	Maximum horsepower	31.3 kW/9,000 min ⁻¹ (42 HP/9,000 rpm)
	Maximum torque	37.0 N.m (3.70 kg.m)/7,000 min ⁻¹ (rpm)
	Oil capacity	3.0 liters (3.2 U.S. qt., 2.6 Imp. qt.)
	Lubrication system	Forced pressure and wet sump
	Air filtration	Oiled polyurethane foam
	Cylinder compression	228.5 ± 98.1 kPa (13.0 ± 1.0 kg/cm ² , 185 ± 14 psi)
	Intake valve	Opens 5° (BTDC)
		Closes 35° (ABDC)
	Exhaust valve	Opens 40° (BBDC)
		Closes 5° (ATDC)
	Valve clearance	IN: 0.10 mm (0.004 in)
		EX: 0.14 mm (0.006 in)
	Engine weight (dry)	59 kg (130 lb)
	Idle speed	1,200 ± 100 min ⁻¹ (1,200 ± 100 rpm)

ITEM		
CARBURETION	Carburetor type	CV type, 32 mm (1.26 in) venturi bore
	Identification number	VB31G
	Pilot screw	1-3/4 turns out
	Float level	15.5 mm (0.61 in)
DRIVE TRAIN	Clutch	Wet, multi-plate
	Transmission	6-speed, constant mesh
	Primary reduction	2.960
	Gear ratio I	2.857
	Gear ratio II	1.947
	Gear ratio III	1.545
	Gear ratio IV	1.280
	Gear ratio V	1.074
	Gear ratio VI	0.931
	Final reduction	2.250
	Gearshift pattern	Left foot operated return system
ELECTRICAL SYSTEM	Ignition	Condenser capacitive discharge ignition
	Ignition timing "F" mark	15° BTDC at 1,200 $\pm$ 100 min ⁻¹ (1,200 $\pm$ 100 rpm) idle
	Full advance	43° BTDC at 4,500 min ⁻¹ (4,500 rpm)
	Starting system	Starting motor only
	Generator	Three phase A.C. generator 0.150 kW/5,000 min ⁻¹ (5,000 rpm)
	Battery capacity	12 V — 12 AH
	Spark plug	DR8ES (NGK), X24ESR-U (ND)
	Spark plug gap	0.6-0.7 mm (0.024-0.028 in)
	Fuses	30 A (main fuse), 7 A, 10 A and 15 A
LIGHTS	Headlight (low/high beam)	12 V-55/60 W
	Tail/stoplight	12 V-5/21 W
	Turn signal light (front/rear)	12 V-21/21 W
	Speedometer light	12 V-3 W
	Tachometer light	12 V-3 W
	Neutral indicator light	12 V-3 W
	Turn signal indicator light	12 V-3 W
	High beam indicator light	12 V-3 W
	Position light	12 V-4 W

GENERAL INFORMATION

TORQUE VALUES

• ENGINE

Item	Q'ty	Torque Values		
		N.m	kg.m	ft.lb
1. Cylinder head cover bolt	2	8—12	0.8—1.2	6—9
2. Tappet adjusting nut	6	20—25	2.0—2.5	15—18
3. Cylinder head bolt	8	30—33	3.0—3.3	22—24
4. Cam sprocket knock bolt	2	18—22	1.8—2.2	13—16
5. Spark plug	2	15—20	1.5—2.0	11—14
6. Drive gear fixing bolt	1	45—50	4.5—5.0	33—36
7. Clutch center lock nut 20 mm	1	45—50	4.5—5.0	33—36
8. Balancer, 8 mm nut	1	20—25	2.0—2.5	15—18
9. Balancer, 10 mm nut	1	30—35	3.0—3.5	22—25
10. A.C. generator rotor set bolt	1	100—120	10.0—12.0	70—90
11. Crankshaft holder bolt, 10 mm bolt	6	33—37	3.3—3.7	24—27
12. Connecting rod nut	4	25—29	2.5—2.9	18—21
13. Starting clutch bolt, TORX bolt	3	14—17	1.4—1.7	10—12
14. Oil filter center bolt	1	28—32	2.8—3.2	20—23
15. Oil drain plug	1	25—35	2.5—3.5	18—25
16. Exhaust pipe flange nut, 6 mm	4	8—12	0.8—1.2	6—9
17. Muffler chamber clamp bolt	4	18—25	1.8—2.5	13—18
18. Gear shift pedal	1	8—12	0.8—1.2	6—9

• FRAME

Item	Q'ty	Torque Values		
		N.m	kg.m	ft.lb
1. Steering upper holder bolt	4	20—30	2.0—3.0	14—22
2. Steering lower holder bolt	4	23—30	2.3—3.0	17—22
3. Steering stem nut	1	90—120	9.0—12.0	65—87
4. Front fork bolt	2	70—90	7.0—9.0	51—65
5. Front fork bottom bridge bolt	2	30—40	3.0—4.0	22—29
6. Front and rear brake disc	5	27—33	2.7—3.3	20—24
7. Caliper set bolt	2	30—40	3.0—4.0	22—29
8. Rear caliper set bolt	2	15—20	1.5—2.0	11—15
9. Rear master cylinder set bolt	2	20—24	2.0—2.4	15—17
10. Brake caliper bleeder valve	1	7—9	0.7—0.9	5—7
11. Front axle nut	1	50—80	5.0—8.0	37—59
12. Front axle holder nut	4	18—25	1.8—2.5	13—18
13. Rear axle nut	1	70—100	7.0—10.0	51—72
14. Final driven sprocket	4	60—70	6.0—7.0	43—51
15. Rear fork pivot nut	1	60—80	6.0—8.0	43—58
16. Rear shock absorber upper bolt	2	30—40	3.0—4.0	22—29
17. Rear shock absorber lower bolt	2	30—40	3.0—4.0	22—29
18. Foot peg bolt	4	55—65	5.5—6.5	40—47
19. Drive chain adjusting nut	2	8—12	0.8—1.2	6—9
20. Fuel tank set bolt	1	15—23	1.5—2.3	11—17
21. Rear brake pedal pivot bolt	1	18—25	1.8—2.5	13—18
22. Engine hanger	5	45—60	4.5—6.0	33—43

• Torque specifications listed above are for important fasteners. Others should be tightened to the standard torque values on next page.

STANDARD TORQUE VALUES

Type	Torque N.m (kg.m, ft.lb)	Type	Torque N.m (kg.m, ft.lb)
5 mm bolt, nut	4.5—6 (0.45—0.6, 3.5—4.5)	5 mm screw	3.5—5 (0.35—0.5, 2.5—3.6)
6 mm bolt, nut	8—12 (0.8—1.2, 6—9)	6 mm screw	7—11 (0.7—1.1, 5—8)
8 mm bolt, nut	18—25 (1.8—2.5, 13—18)	6 mm flange bolt, nut	10—14 (1.0—1.4, 7—10)
10 mm bolt, nut	30—40 (3.0—4.0, 22—29)	8 mm flange bolt, nut	24—30 (2.4—3.0, 17—22)
12 mm bolt, nut	50—60 (5.0—6.0, 36—43)	10 mm flange bolt, nut	30—40 (3.0—4.0, 22—29)

GENERAL INFORMATION

TOOLS

• SPECIAL

DESCRIPTION	PART NUMBER	ALTERNATIVE TOOL	PART NUMBER
Clutch center holder	07923—9580000		
Compression gauge attachment	07510—MB00101		
Valve guide reamer	07984—MA60000		
Piston ring compressor (2-required)	07954—2830000		
Piston base (2-required)	07958—4130000		
Snap ring pliers	07914—3230001		
Attachment	07945—3330300		
Attachment	07946—3290100		
Lock nut wrench	07910—4630100		
Steering stem socket	07916—3710100		
Hex wrench, 6 mm	07917—3230000		
Steering stem driver	07946—MB00000	Steering stem driver	07946—3710601
		Shock absorber compressor attachment (collar)	07964—MB00200
Bearing remover set	07936—3710001	Spindle assembly	07936—3710600
		Remover handle	07936—3710100
		Sliding weight	07741—0010200
Needle bearing remover	07946—KA50000		
Ball race remover	07953—3330000		

• COMMON

DESCRIPTION	PART NUMBER	ALTERNATIVE TOOL	PART NUMBER
Float level gauge	07401—0010000		
Lock nut wrench socket (30 x 32 mm)	07716—0020400		
Lock nut wrench socket (26 x 29 mm)	07716—0020201		
Extension bar	07716—0020500		
Universal holder	07725—0010101		
Flywheel puller	07733—0020000	Flywheel holder	07923—0400000
Valve guide remover (5.5 mm) (IN)	07742—0010100	Flywheel puller	07933—3950000
Valve guide remover (6.6 mm) (EX)	07742—0010200	Valve guide driver	07942—3290100
* Bearing driver outer (42 x 47 mm)	07746—0010300	Valve guide driver	07942—6110000
Bearing driver pilot (15 mm)	07746—0040300	* Bearing driver	07945—3330100
Bearing driver pilot (17 mm)	07746—0040400		
Bearing driver pilot (20 mm)	07746—0040500		
Front fork oil seal driver body	07747—0010100		
Front fork oil seal attachment (D)	07747—0010500	} Fork seal driver	07947—3330000
Bearing driver handle (A)	07749—0010000	Driver handle attachment	07949—6110000
Valve spring compressor	07757—0010000		
Rear shock absorber compressor	07959—3290001		
Valve adjuster wrench 10 x 12 mm	07708—0030200		
Valve adjuster wrench A	07708—0030300		
Valve guide driver	07743—0020000		
Bearing remover shaft	07746—0050100		
Bearing remover head 15 mm	07746—0050400		
Bearing remover head 17 mm	07746—0050500		

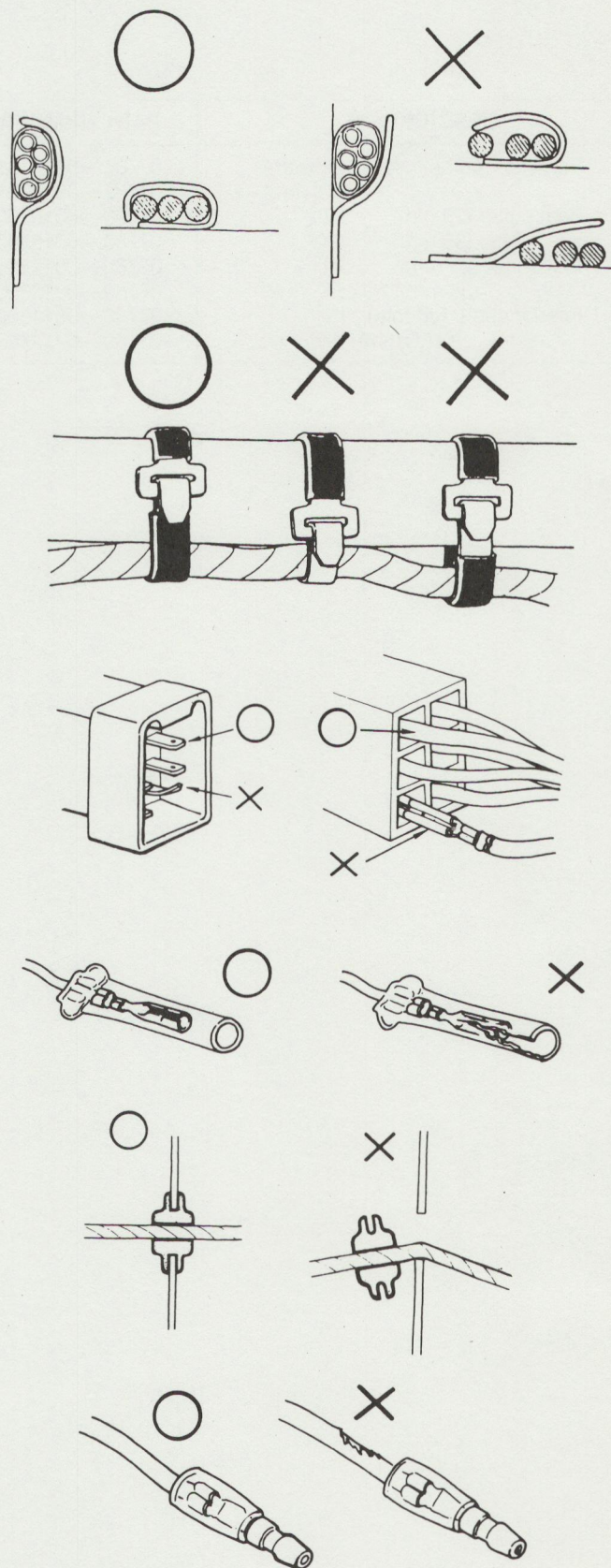
• SEAT CUTTER

DESCRIPTION	PART NUMBER	REMARKS
Valve seat cutter holder (5.5 mm)	07781—0010101	
(6.6 mm)	07781—0010201	
Seat cutter (29 mm) IN	07780—0010300	
(35 mm) EX	07780—0010400	
Flat cutter (28 mm) IN	07780—0012100	
(35 mm) EX	07780—0012300	
Interior cutter (26 mm) IN	07780—0014500	
(37.5 mm) EX	07780—0014100	

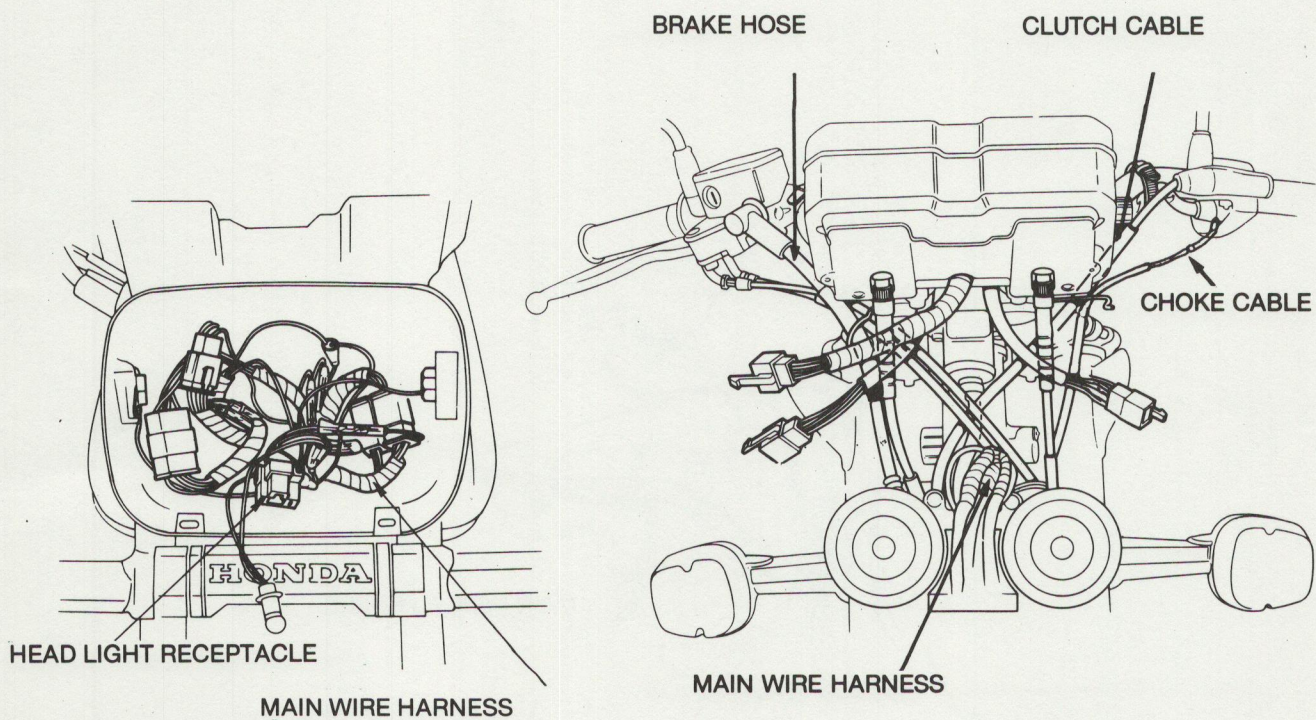
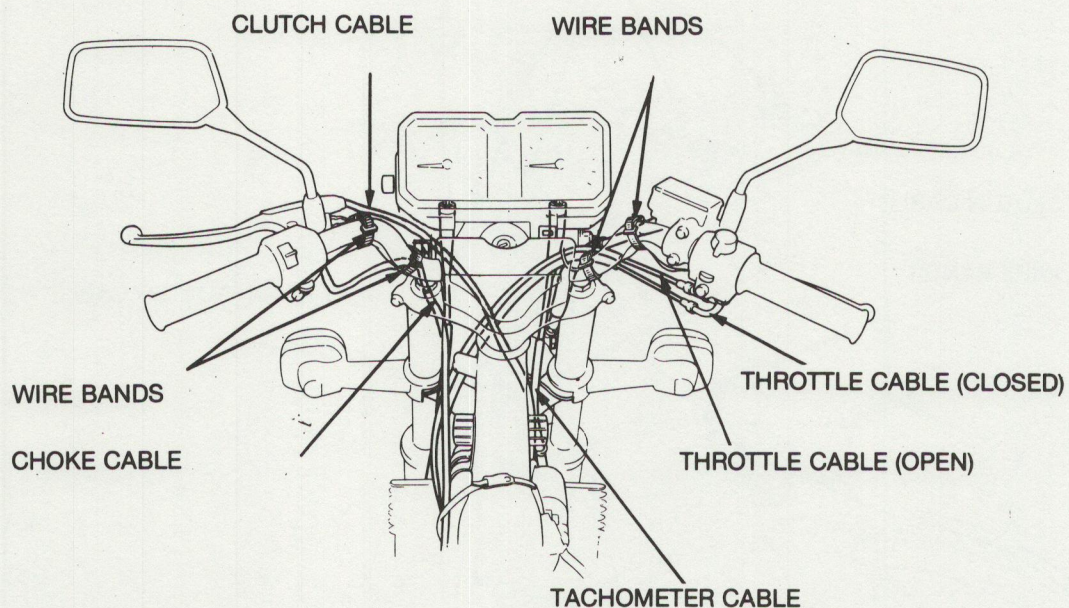
CABLE AND HARNESS ROUTING

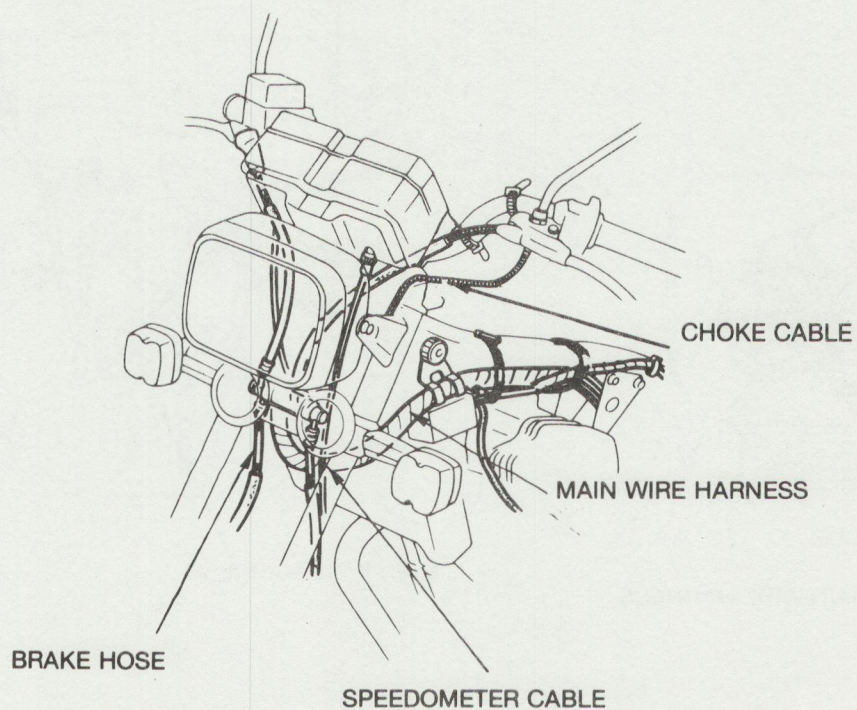
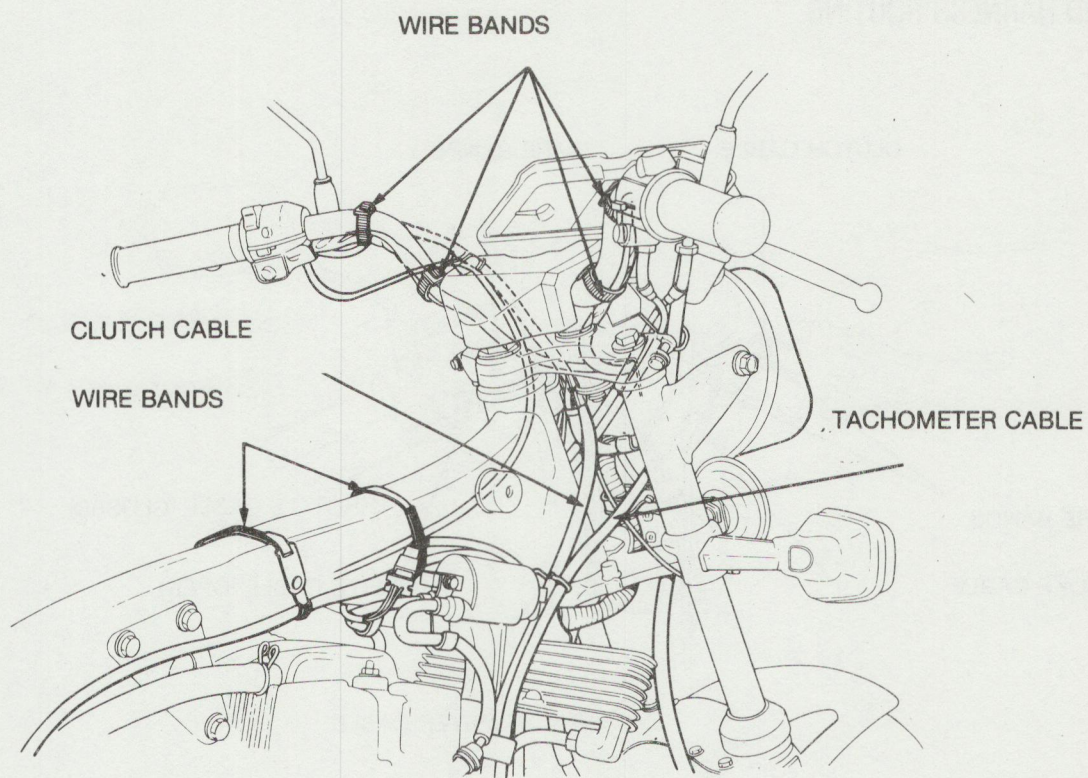
Note the following when routing cables and wire harnesses.

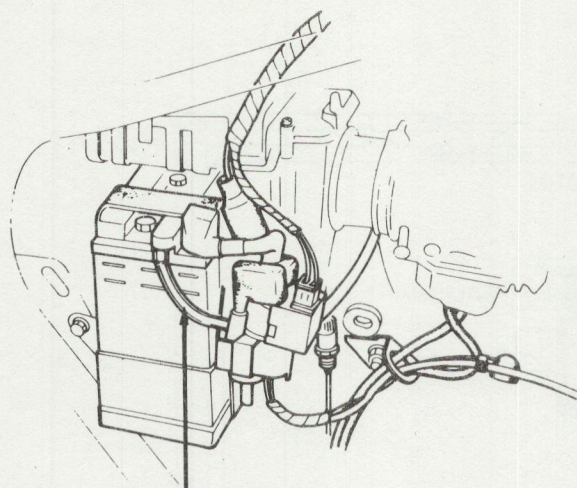
- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze wires against the weld or end of its clamp when a weld-on clamp is used.
- Secure wires and wire harnesses to the frame by means of their respective wire bands at the designated locations. Tighten the bands in such a way that only the insulated surfaces contact the wires or wire harnesses.
- Route harnesses in such a way that they are not pulled taut or have excessive slack.
- Protect wires and harnesses by means of electrical tape or plastic tubes if they contact a sharp edge or corner. Clean the attaching surface thoroughly before applying tape.
- Do not use wires or harnesses with a damaged insulator. Repair by wrapping them with a protective tape or replace them.
- Route wire harnesses to avoid sharp edges or corners.
- Also avoid the projected ends of bolts and screws.
- Keep wire harnesses away from the exhaust pipes and other hot parts.
- Be sure grommets are seated in their grooves properly.
- After clamping, check each harness to be certain that it is not interfering with any moving or sliding parts.
- After routing, check that the wire harnesses are not twisted or kinked.
- Wire harnesses routed along the handlebars should not be pulled taut, have excessive slack, be pinched, or interfere with adjacent or surrounding parts in all steering positions.



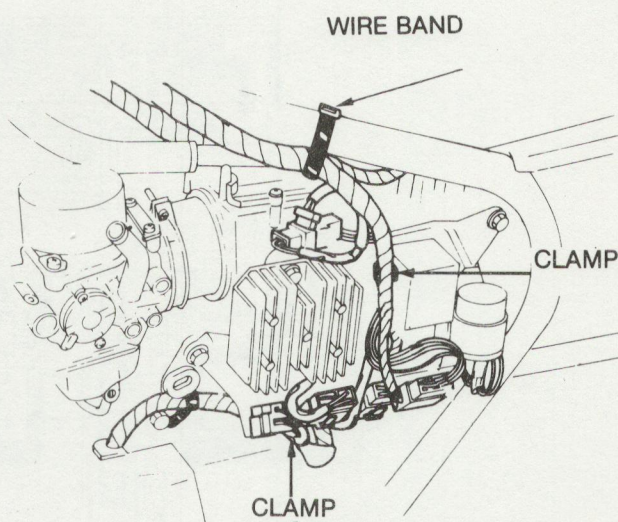
CABLE AND HARNESS ROUTING







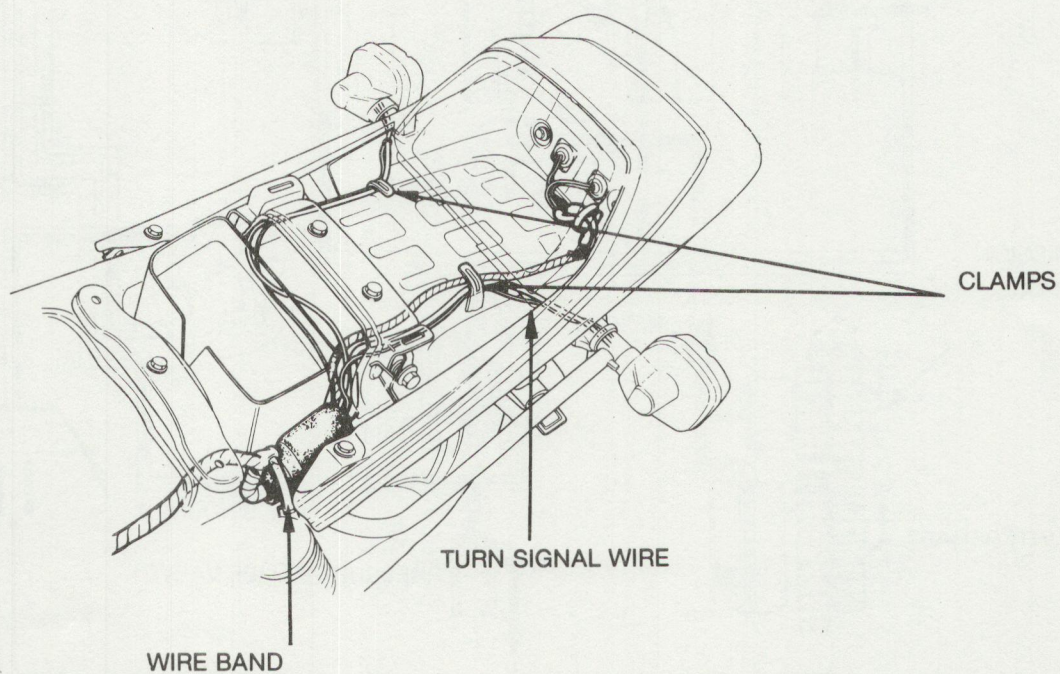
BATTERY BREATHER TUBE



WIRE BAND

CLAMP

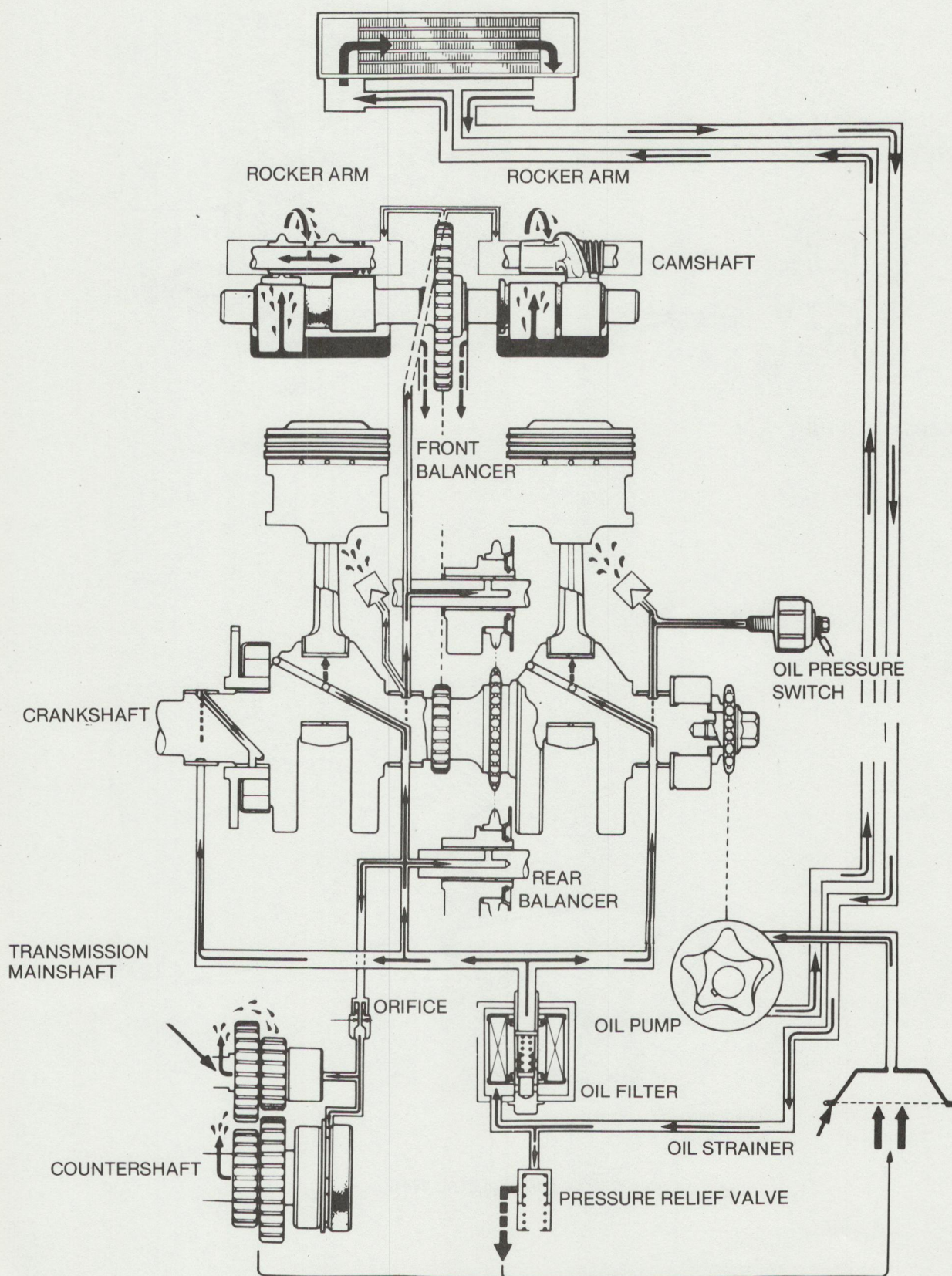
CLAMP



CLAMPS

TURN SIGNAL WIRE

WIRE BAND



SERVICE INFORMATION	2-1	ENGINE OIL AND FILTER CHANGE	2-2
TROUBLESHOOTING	2-1	OIL COOLER	2-4
ENGINE OIL LEVEL	2-2	LUBRICATION POINTS	2-6

SERVICE INFORMATION

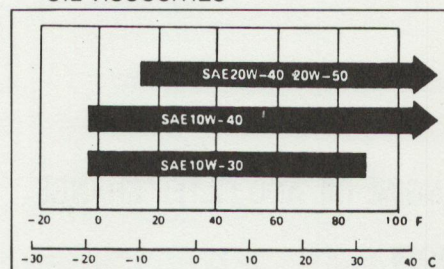
GENERAL INFORMATION

Oil pump: Refer to Section 8.
Oil pressure relief valve: Refer to Section 8.

SPECIFICATIONS

Oil capacity	3.0 liters (3.2 qt.) at engine disassembly, 2.5 liters (2.6 qt.) at oil change.
Oil	HONDA 4-stroke oil or equivalent
Oil pump delivery	11 $\pm$ 1 liters/4,000 rpm
Oil recommendation	Use HONDA 4-STROKE OIL or equivalent. API SERVICE CLASSIFICATION: SE or SF VISCOSITY: SAE 10W-40 Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.

OIL VISCOSITIES



TORQUE VALUES

Engine oil drain plug 25—35 N.m (2.5—3.5 kg.m, 18—25 ft.lb)
Engine oil filter bolt 28—32 N.m (2.8—3.2 kg.m, 20—23 ft.lb)

TROUBLESHOOTING

Too low oil level:

1. Normal oil consumption
2. External oil leaks
3. Worn piston rings

Oil contamination

1. Oil or filter not changed often enough
2. Faulty head gasket
3. Worn piston rings

Low oil pressure

1. Low oil level
2. Pressure relief valve stuck open
3. Plugged oil pick-up screen
4. Worn oil pump
5. External oil leaks

High oil pressure:

1. Pressure relief valve stuck closed
2. Plugged oil filter, gallery or metering orifice
3. Incorrect oil being used

No oil pressure

1. Low oil level
2. Broken oil pump drive chain
3. Faulty oil pump
4. Internal oil leakage

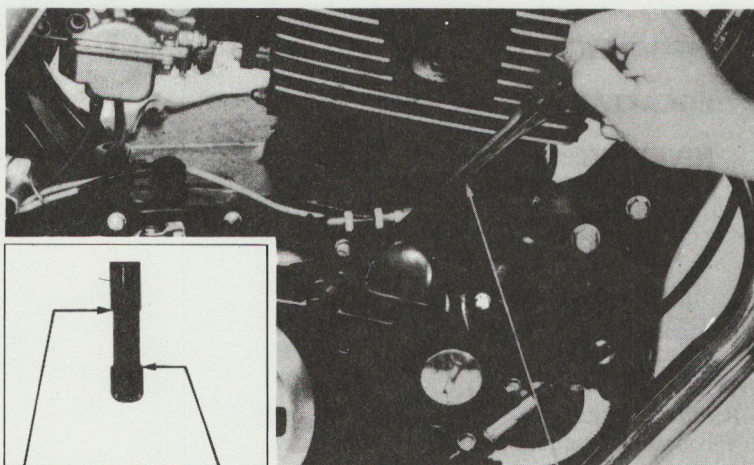
ENGINE OIL LEVEL

Put the motorcycle on its center stand on level ground. Start the engine and let it idle for 2—3 minutes. Turn off the engine. Remove the filler cap/dipstick, wipe it clean and insert it without screwing it in. Remove the filler cap/dipstick and check the oil level.

If the level is below the lower level mark on the dipstick, fill to the upper level mark with recommended oil.

Check the oil pressure by watching the oil pressure warning light after the engine starts. The light should go off after one or two seconds.

If it does not, stop the engine and check the oil pump output and/or oil circuit.



LOWER UPPER OIL FILLER CAP/DIPSTICK

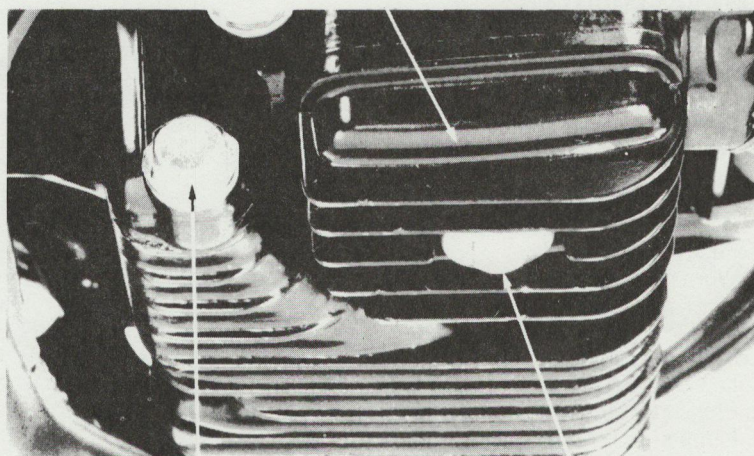
ENGINE OIL AND FILTER CHANGE

NOTE

Engine oil change is performed with the engine at normal operating temperature and the vehicle upright or on the center stand to assure complete and rapid draining.

Remove the oil filler cap after the engine is warm. Remove the drain plug and oil filter cover to drain oil from the engine.

OIL FILTER COVER



OIL DRAIN PLUG

OIL FILTER BOLT

Remove the oil filter element from the cover.
Check the operation of the bypass valve in the oil filter bolt.

Make sure that the sealing washer on the drain plug and the O-rings on the oil filter bolt and the oil filter cover are in good condition.

Install a new oil filter element, the oil filter bolt and the cover.

Tighten the oil filter bolt to the torque specified.

TORQUE: 28—32 N.m (2.8—3.2 kg.m, 20—23 ft.lb)

Reinstall the drain plug and tighten it to the torque specified.

TORQUE: 25—35 N.m (2.5—3.5 kg.m, 18—25 ft.lb)

Fill the crankcase with the recommended oil.

CAPACITY:

2.5 liters (2.6 US qt, 2.2 Imp qt) after draining

Reinstall the oil filler cap dipstick.

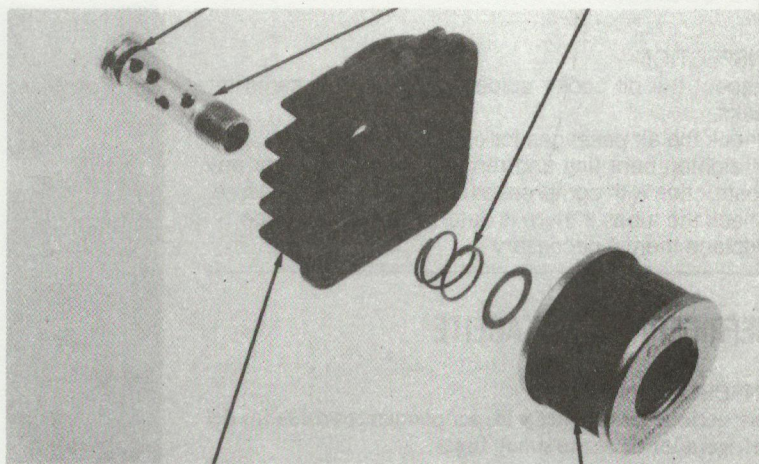
Start the engine and allow it to idle for a few minutes.

Stop the engine and check that the oil level is at the upper level mark of the dipstick with the motorcycle upright, and that there are no oil leaks.

O-RING

OIL FILTER BOLT

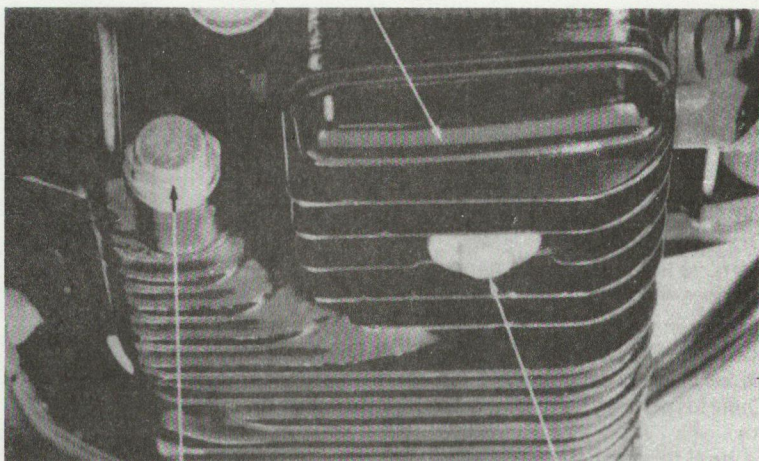
SPRING



FILTER COVER

OIL FILTER

OIL FILTER COVER



OIL DRAIN PLUG

OIL FILTER BOLT

OIL COOLER

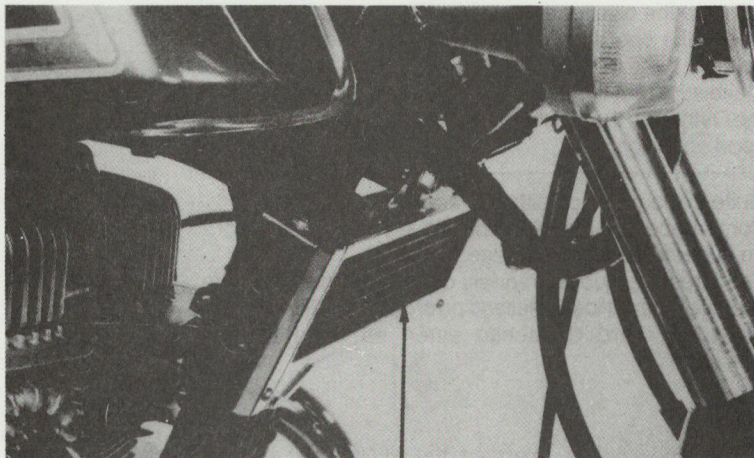
INSPECTION

Inspect the oil cooler soldered joints and seams for leaks.

Check the air passages for clogging or damage.

Straighten bent fins and remove insects, mud or any obstruction with compressed air or low water pressure.

Check the tubes if there is deterioration or damage. Replace them if necessary.



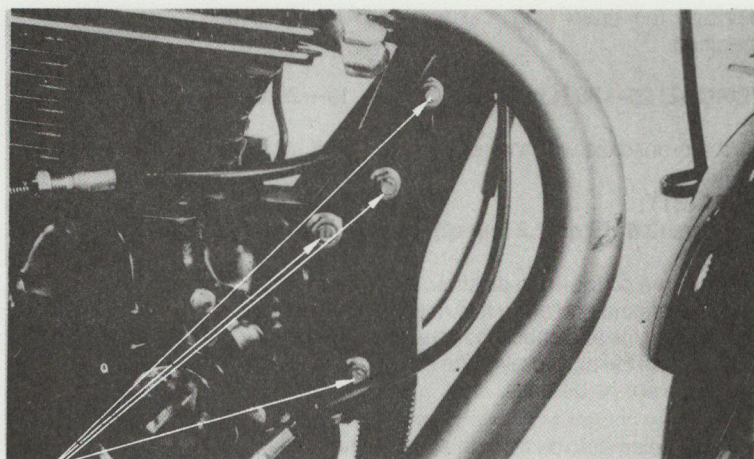
OIL COOLER

OIL COOLER REMOVAL

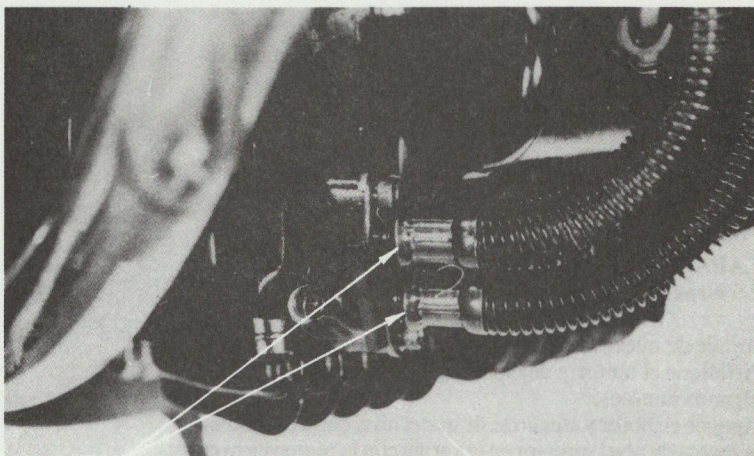
Drain the engine oil.

Remove the front engine hanger bolts and nuts.

Remove the front engine hanger.



BOLTS/NUTS



OIL COOLER HOSES

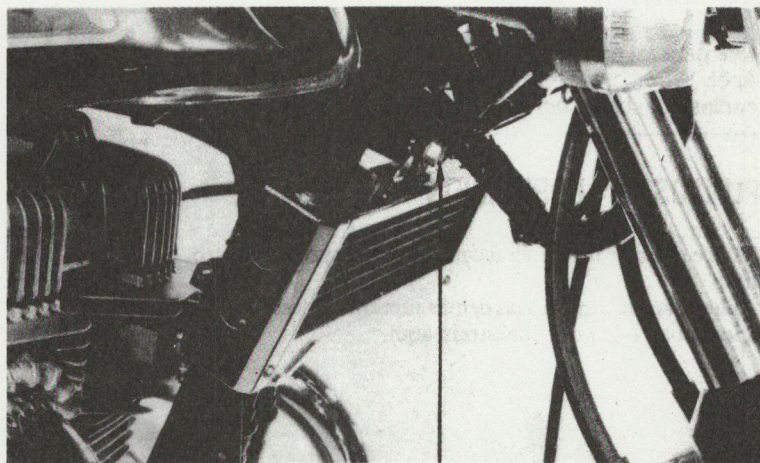
Remove the oil cooler mount bolt.
Remove the oil cooler assembly.

OIL COOLER INSTALLATION

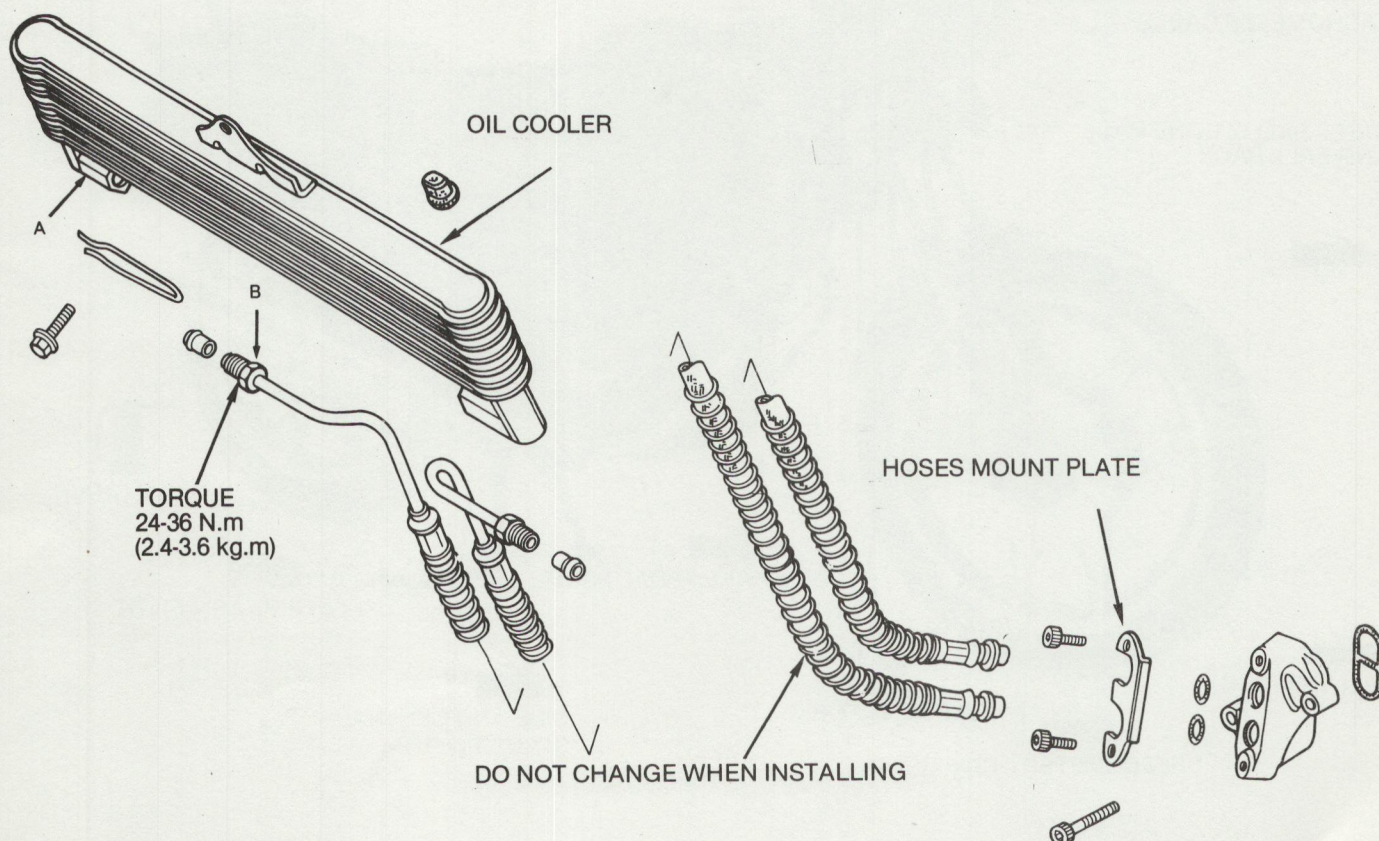
Installation is essentially the reverse of removal.

NOTE

- Always replace the O-rings when removing the oil cooler.
- Clean completely the threads of the oil cooler hoses before installing in order to avoid oil leaks.



MOUNT BOLT

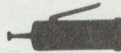


LUBRICATION POINTS

Use general purpose grease when not specified here.
Apply oil or grease to the other sliding surfaces and
cables not shown here.



APPLY OIL



APPLY GREASE



CLUTH, THROTTLE AND CHOKE CABLES

THROTTLE GRIP

CLUTCH AND
BRAKE LEVER PIVOTSSPEEDOMETER AND
TACHOMETER CABLESSTEEL BALLS, CONE RACE
AND BALL RACE

BALL BEARING

SPEEDOMETER DRIVE GEAR

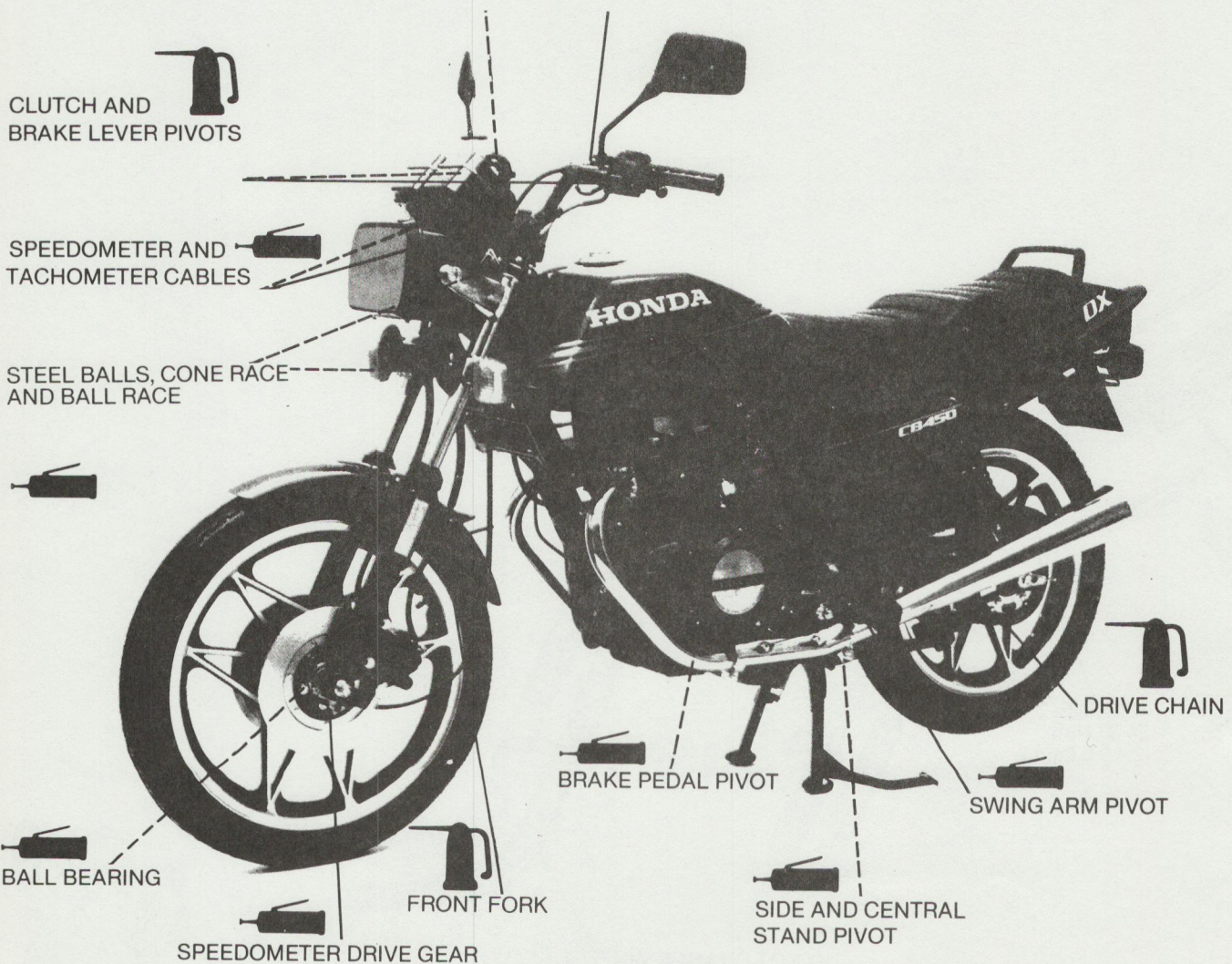
FRONT FORK

BRAKE PEDAL PIVOT

SIDE AND CENTRAL
STAND PIVOT

SWING ARM PIVOT

DRIVE CHAIN



SERVICE INFORMATION	3—1	IGNITION TIMING	3—16
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SERVICE INFORMATION

GENERAL

Engine oil level check	Page 2-2
Engine oil change	Page 2-2
Engine oil filter change	Page 2-3

SPECIFICATIONS

ENGINE

Ignition timing:	Initial:	15° BTDC at 1,200 min ⁻¹ (rpm)
	Full advance:	43° BTDC at 4,500 min ⁻¹ (rpm)
Spark plug:	Plug gap:	0.6—0.7 mm (0.023—0.027 in)
	Plug type:	DR8ES (NGK), X24ESR-U (ND)
Valve clearance:		
INTAKE:		0.10 mm (0.004 in)
EXHAUST:		0.14 mm (0.006 in)
Throttle grip free play:		2—6 mm (1/8—1/4 in)
Idle speed:		1,200 ± 100 min ⁻¹ (rpm)

MAINTENANCE

FRAME

Drive chain slack:		15—25 mm (5/8—1 in)
Clutch lever free play:		10—20 mm (3/8—3/4 in)
Side stand spring tension:		2—3 kg (4.4—4.6 lb)
Tire pressure: (Cold tyre)		
Rider only:	Front	225 kPa (2.25 kg/cm ² , 32 psi)
	Rear	225 kPa (2.25 kg/cm ² , 32 psi)
Rider and one passenger:	Front	225 kPa (2.25 kg/cm ² , 32 psi)
	Rear	250 kPa (2.50 kg/cm ² , 36 psi)
Tire size:	Front	3.60 S19-52S
	Rear	4.10 S18-60S

TORQUE VALUES

Tappet adjusting nut:	20—25 N.m (2.0—2.5 kg.m, 15—18 ft.lb)
Rear axle nut:	70—100 N.m (7.0—10.0 kg.m, 51—72 ft.lb)
Fuel strainer cup	3—5 N.m (0.3—0.5 kg.m, 2—4 ft.lb)

TOOLS**Common**

Valve adjuster wrench, 10 x 12 mm	07708—0030200
Valve adjuster wrench A.	07708—0030300

MAINTENANCE SCHEDULE

The schedule below is based on normal riding conditions. The maintenance breaks should be shortened when riding in dusty areas.

I : INSPECT, CLEAN, ADJUST, OR REPLACE IF NECESSARY

C: CLEAN

R: REPLACE

A: ADJUST

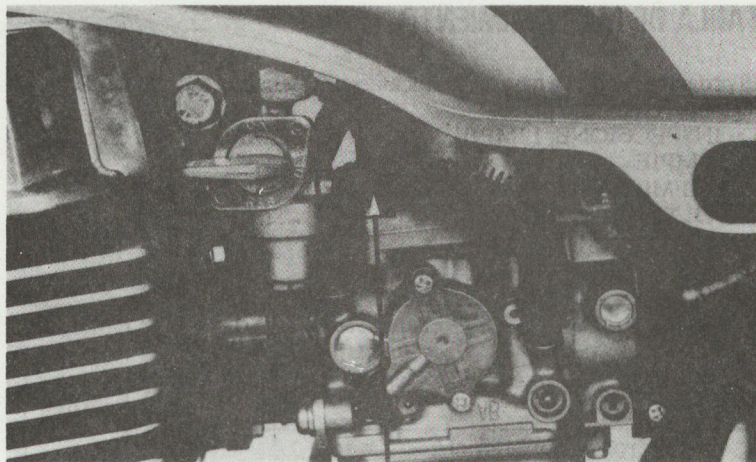
L: LUBRICATE

ITEM	FREQUENCY	ODOMETER READING [NOTE 4]						
	WHICHEVER COMES FIRST	1,000 km	6,000 km	12,000 km	18,000 km	24,000 km	30,000 km	36,000 km
FUEL LINES	EVERY		I	I	I	I	I	I
FUEL STRAINER		C	C	C	C	C	C	C
THROTTLE OPERATION		I	I	I	I	I	I	I
CARBURETOR CHOKE			I	I	I	I	I	I
AIR CLEANER	NOTE (1)		C		C		C	R
CRANKCASE BREATHER	NOTE (2)		C	C	C	C	C	C
SPARK PLUGS			I	R	I	R	I	R
VALVE CLEARANCE		I	I	I	I	I	I	I
CAM CHAIN TENSION		A	A	A	A	A	A	A
ENGINE OIL	YEAR	R	REPLACE EVERY 3000 km (1,865 miles)					
ENGINE OIL FILTER	YEAR	R	R	R	R	R	R	R
CARBURETOR IDLE SPEED		I	I	I	I	I	I	I
CARBURETOR SYNCHRONIZATION		I	I	I	I	I	I	I
BALANCER CHAIN TENSION					A			A
DRIVE CHAIN	NOTE (3)			IL: EVERY 1000 km (621 miles)				
BATTERY	MONTH	I	I	I	I	I	I	I
BRAKE FLUID	MONTH: I 1 YEARS: R	I	I	I	I	I	I	R
BRAKE/PAD WEAR			I	I	I	I	I	I
BRAKE SYSTEM		I	I	I	I	I	I	I
STOP LIGHT SWITCH		I	I	I	I	I	I	I
HEADLIGHT AIM		I	I	I	I	I	I	I
CLUTCH		I	I	I	I	I	I	I
SIDE STAND			I	I	I	I	I	I
SUSPENSION		I	I	I	I	I	I	I
NUTS, BOLTS, FASTENERS		I	I	I	I	I	I	I
WHEELS		I	I	I	I	I	I	I
STEERING HEAD BEARING		I		I		I		I

- NOTE: 1. Service more frequently when riding in dusty areas.
 2. Service more frequently when riding beneath the rain or at full throttle.
 3. Service more frequently when riding off-road.
 4. For higher odometer readings, repeat at the frequency interval established here.

ENGINE FUEL LINES

Check the fuel lines for deterioration, damage or leakage.
Replace them if necessary.



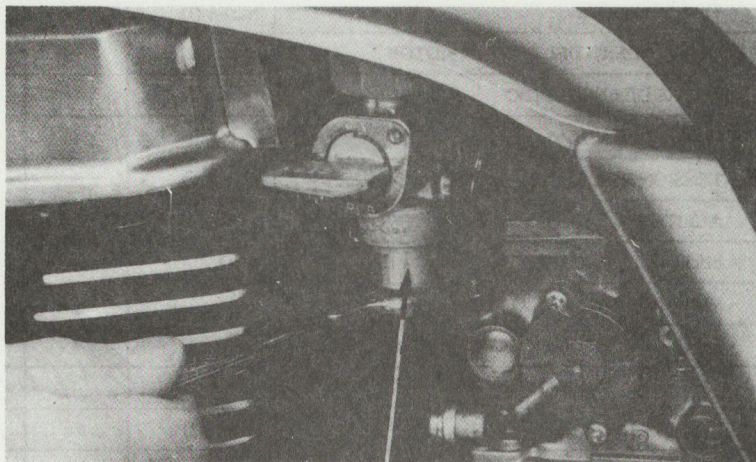
FUEL LINE

FUEL STRAINER

Turn the fuel valve OFF.
Remove the fuel cup, O-ring and filter screen, draining the gasoline into a suitable container.

WARNING

Gasoline is flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks near the equipment while draining fuel.



FUEL CUP

Wash the cup and filter screen in clean non-flammable or high flash point solvent.

Reinstall the screen, aligning the index marks on the fuel valve body and filter screen.

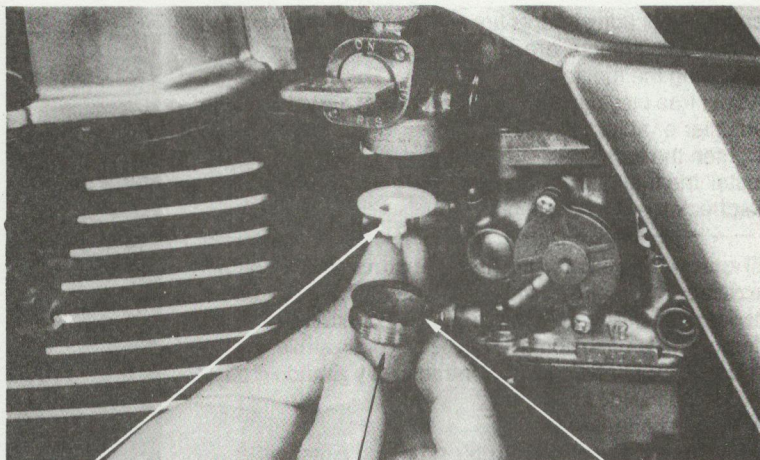
Install a new O-ring in the fuel valve body.

Reinstall the fuel cup, making sure the new O-ring is in place.

Hand tighten the fuel cup. Torque to specification.

TORQUE: 3—5 N.m (0.3—0.5 kg.m, 2—4 ft.lb)

After installing, turn the fuel valve ON and check that there are no fuel leaks.



FILTER SCREEN

FUEL CUP

O-RING

THROTTLE OPERATION

Check for smooth throttle grip full opening and automatic full closing in all steering positions. Check the throttle cables and replace them if they are deteriorated, kinked or damaged.

Lubricate the throttle cables (page 2—6) if throttle operation is not smooth.

Measure throttle grip free play at the throttle grip flange.

FREE PLAY: 2—6 mm (1/8—1/4 in)



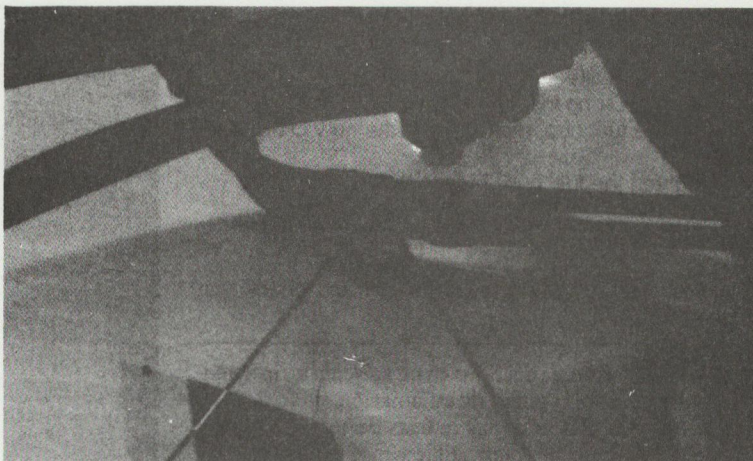
Adjustment can be made at either end of the throttle cable. Minor adjustments are made at the upper end and major adjustments are made at the lower end, after removing the fuel tank.

Adjust free play by loosening the lock nut and turning the adjuster or adjusting nut.

Tighten the lock nut.

Install the fuel tank if removed.

Recheck throttle operation.



LOCK NUT

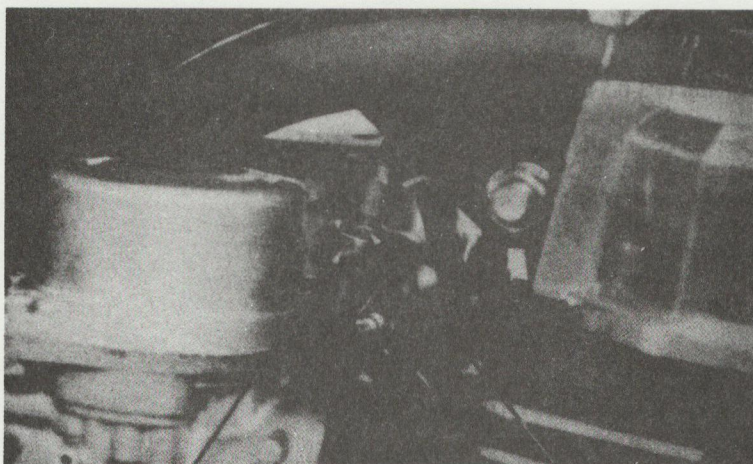
ADJUSTER

CARBURETOR CHOKE

Remove the fuel tank.

Operate the choke lever and check for smooth operation. Lubricate the choke cable, if operation is not smooth.

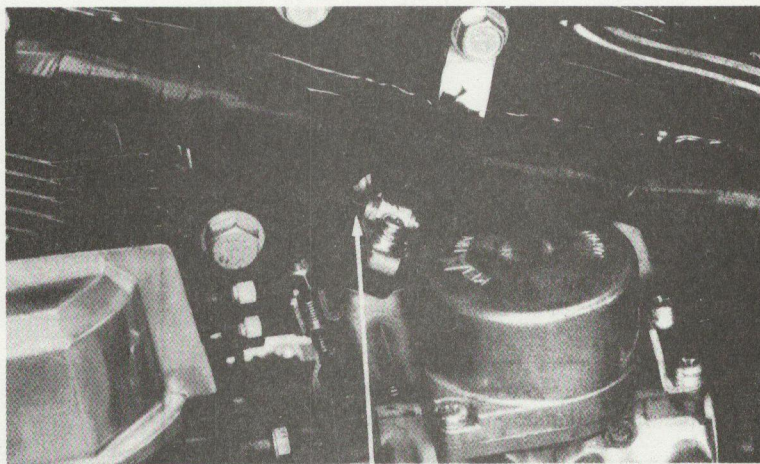
Pull the choke lever backward all the way to fully closed. Make sure that the choke valve is fully closed at the carburetors by moving the lever.



LOCK NUT

ADJUSTING NUT

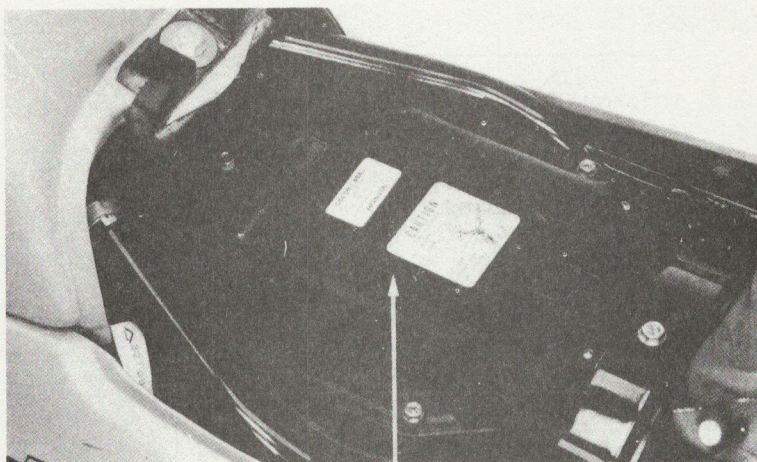
To adjust, loosen the choke cable clamp on the carburetor.
Move the cable casing until the lever is fully closed.
Tighten the clamp, holding the choke lever fully closed.
Push the choke lever forward all the way to fully open.
Make sure the choke valve is fully open by checking for free play in the cable between the lever and cable casing.
Install the fuel tank.



CHOKE CABLE

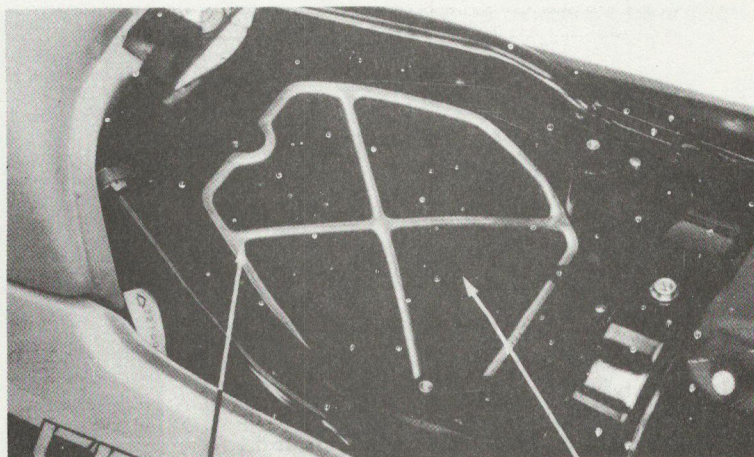
AIR CLEANER

Remove the seat.
Remove the air cleaner cover by withdrawing the attaching screws.



AIR CLEANER COVER

Remove the element retainer and element.



ELEMENT RETAINER

ELEMENT

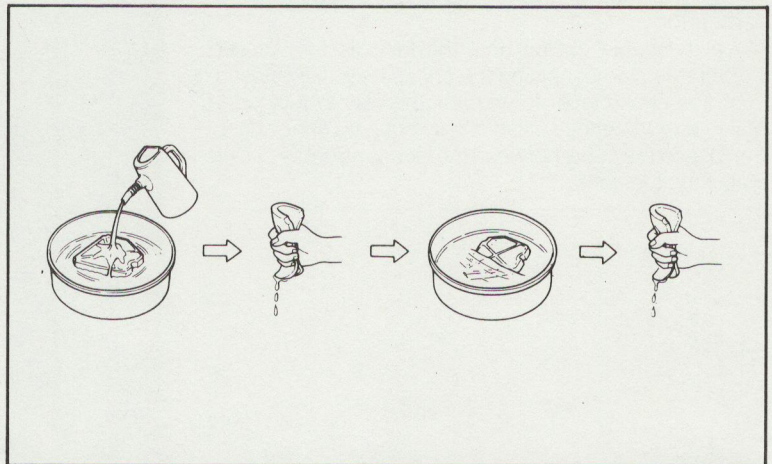
Wash the element in non-flammable or high flash point solvent and allow it to dry thoroughly.

WARNING

Never use gasoline or low flash point solvents to clean the air cleaner element. A fire or an explosion could result.

Soak the air cleaner element in clean gear oil (SAE 80 or 90) and squeeze out the excess.

To install the air cleaner element, reverse the removal procedure.

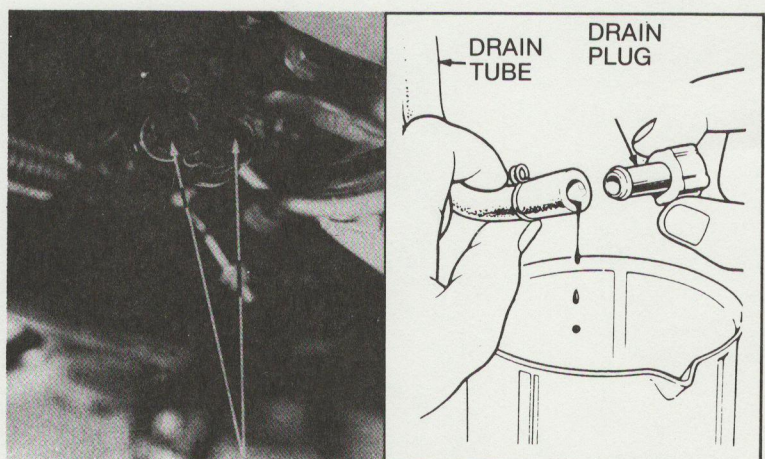

CRANKCASE BREATHER

Remove the plug from the drain tube to empty any deposits.

Install the drain plugs.

NOTE

Service more frequently when riding beneath the rain or at full throttle, or if the deposit level can be seen in the transparent section of the drain tube.



DRAIN PLUG

SPARK PLUGS

Disconnect the spark plug caps and remove the spark plugs.

Visually inspect the spark plug electrodes for wear. The center electrode should have square edges and the side electrode should have a constant thickness. Discard the spark plug if there is apparent wear or if the insulator is cracked or chipped. If the spark plug deposits can be removed by sandblasting, the spark plug can be reused.

Adjust the spark plug gap by bending the side electrode.

SPARK PLUG GAP: 0.6—0.7 mm (0.024—0.028 in.)

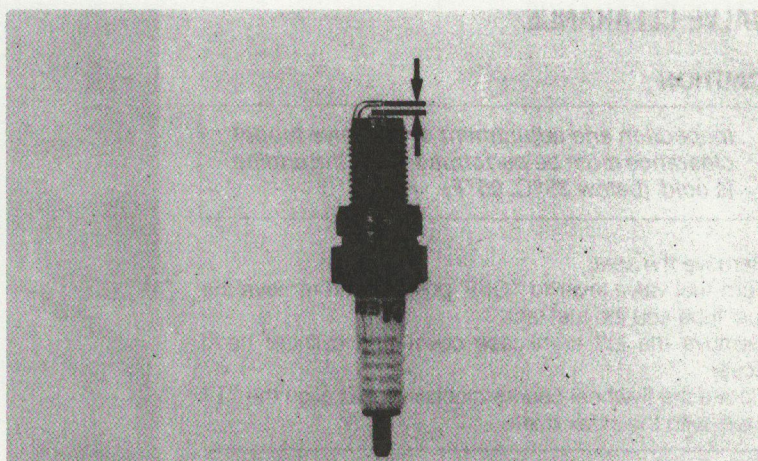
RECOMMENDED SPARK PLUGS:

NGK: DPR8EA-9
ND : X24EPR-U9
NGK: DP9EA
ND : X27EP-U9

Reinstall the spark plugs and reconnect the spark plug caps.

NOTE

First tighten the spark plug finger tight, then tighten by means of a spark plug wrench.



VALVE CLEARANCE

CAUTION

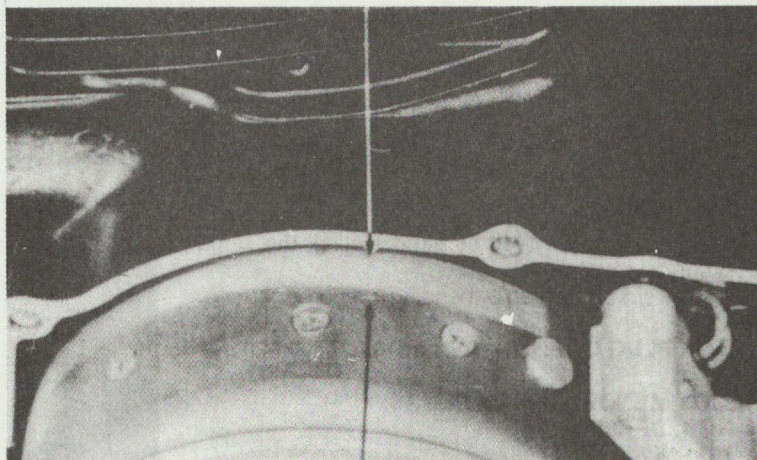
Inspection and adjustment of the valve tappet clearance must be performed while the engine is cold. (below 35°C, 95°F)

Remove the seat.

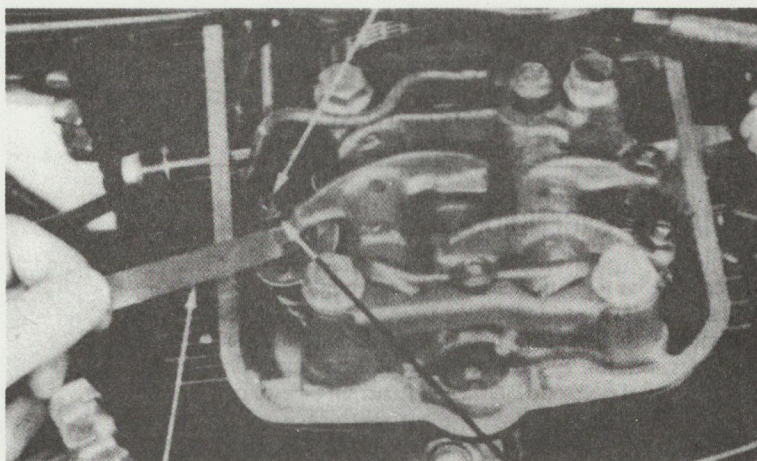
Turn fuel valve lever to "OFF" position and remove the fuel tube and the fuel tank.

Remove the left crankcase cover and cylinder head cover.

Rotate the flywheel counterclockwise and align the "T" mark with the index mark.



ADJUSTING SCREW



FEELER GANGE

LOCK NUT

Check the clearance of both valves by inserting the feeler gauge between the tappet adjusting screw and the valve stem. Before checking, make sure that the piston is at TDC in the compression stroke.

VALVE CLEARANCE:

IN: 0.10 mm (0.004 in)

EX: 0.14 mm (0.006 in)

Adjustment is made by loosening the tappet screw lock nut and turning screw until there is a slight drag on the feeler gauge.

Rotate the flywheel counterclockwise one full turn and align the "T" mark with the index mark.
Check the clearance of both valves for the opposite cylinder.

NOTE

Tighten the tappet screw lock nuts and recheck the clearance.

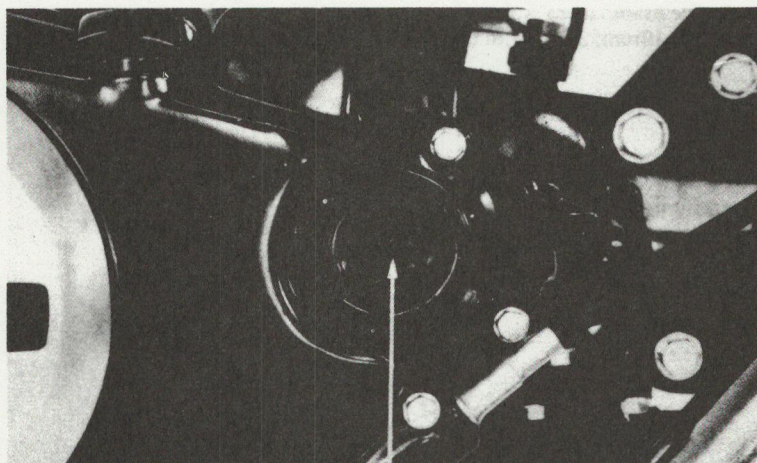
BALANCER CHAIN TENSION

Perform the following if the balancer chain is noisy.
Remove the adjust cap on the right crankcase cover.
Loosen the 8 mm adjuster nut.
When this nut is loosened, the balancer will position itself to provide proper chain tension.
Retighten the 8 mm nut to specified torque.

TORQUE: 20—25 N.m (2.0—2.5 kg.m, 14—18 ft.lb)

NOTE

Readjust as follows if the end of the stopper plate groove contacts the stud bolt.



8 mm ADJUSTING NUT

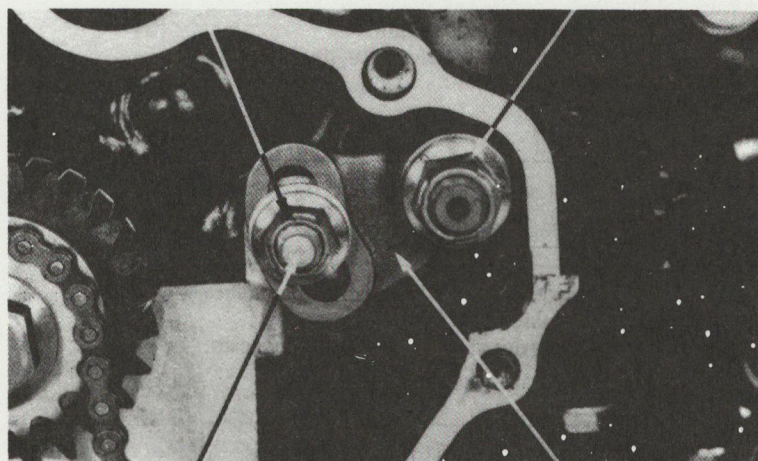
Remove the right crankcase cover.
Remove the 10 mm and 8 mm nuts; remove the stopper plate.
Install the stopper plate, moving it over one spline to move the end of the stopper plate groove away from the stud bolt.
Reinstall the 8 mm nut (adjuster nut) first and then the 10 mm nut (pivot nut) and tighten to the specified torques.

TORQUE:

8 mm nut: 20—25 N.m (2.0—2.5 kg.m, 14—18 ft.lb)
10 mm nut: 30—35 N.m (3.0—3.5 kg.m, 22—25 ft.lb)

8 mm ADJUSTER NUT

10 mm PIVOT NUT

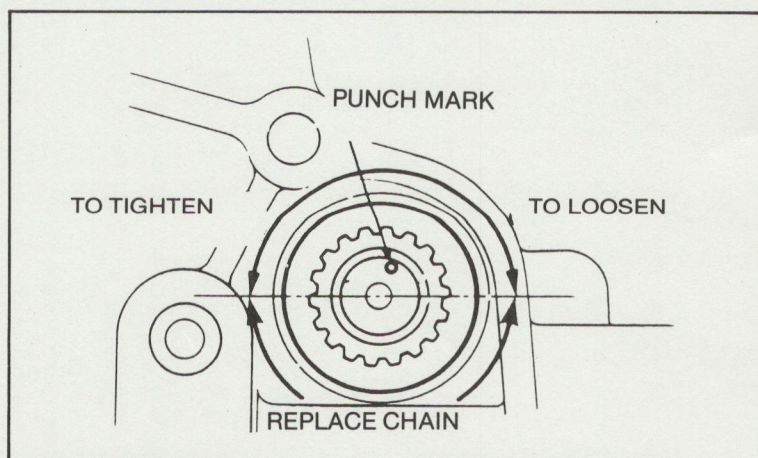


STUD BOLT

STOPPER PLATE

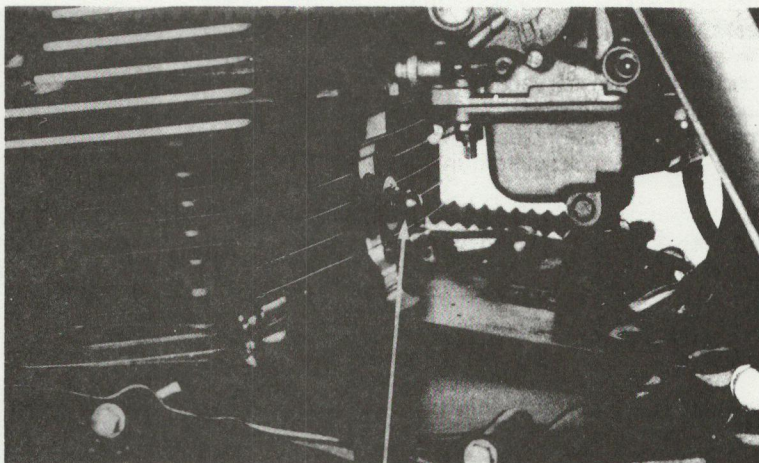
CAUTION

*Replace the chain if the punch mark on the shaft is below the horizontal line.
(Refer to Section 10)*



CAM CHAIN TENSION

Start the engine and allow it to idle.
Loosen the cam chain tensioner lock nut.
When the cam chain tensioner lock nut is loosened, the tensioner will automatically position itself to provide the correct tension.
Retighten the lock nut.



TENSIONER LOCK NUT

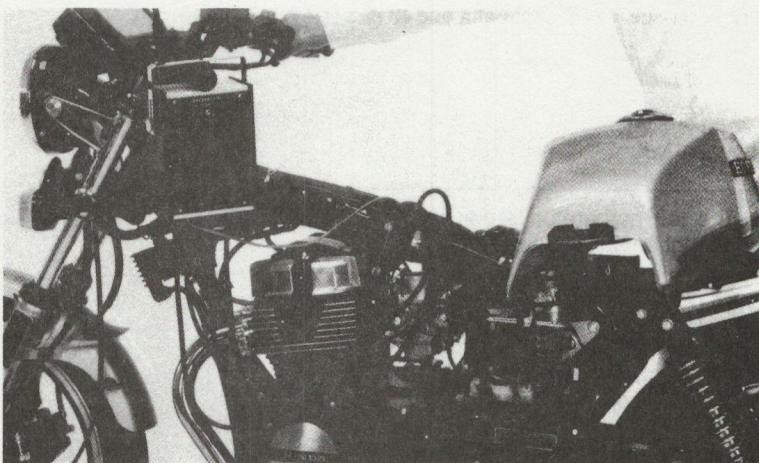
CARBURETOR SYNCHRONIZATION

NOTE

Perform this maintenance work with the engine at normal operating temperature, transmission in neutral and the motorcycle on its center stand.

Warm up the engine and check that the idle speed is within specification.

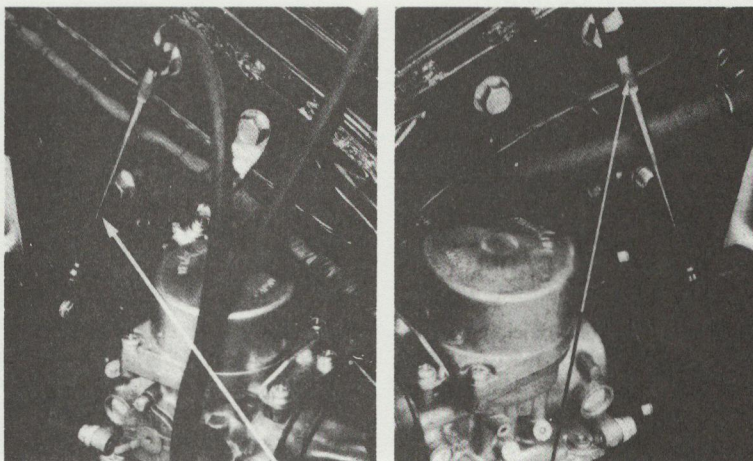
IDLE SPEED: 1,200 $\pm$ 100 rpm



Put the motorcycle upright and remove the fuel tank and seat. Connect a longer fuel line between the fuel tank and the carburetors. Remove the plugs from the cylinder head ports and install vacuum gauge adaptors. Connect vacuum gauges.

Position the throttle adjusting wrench on the balance adjusting screw lock nut from under the right carburetor.

Start the engine. The vacuum gauge readings should be as close as possible to each other with a difference not greater than 40 mm (1.6 in) Hg.



ADAPTORS

NOTE

The left carburetor is the base carburetor and cannot be synchronized.

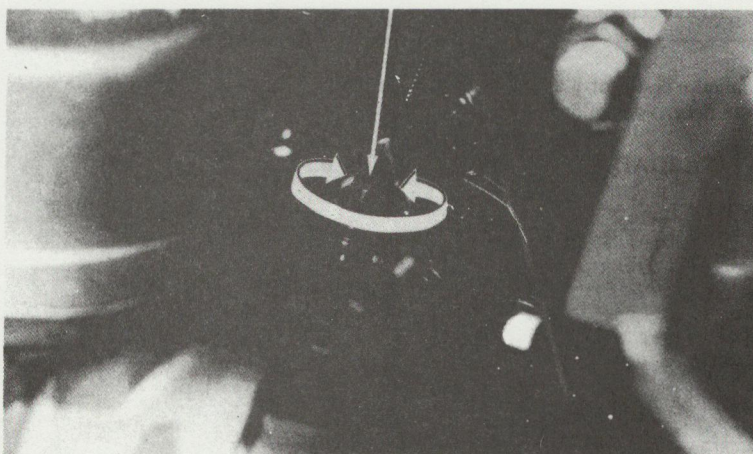
To synchronize, loosen the lock nut on the right carburetor and turn the adjusting screw. While holding the adjusting screw, retighten the lock nut.

Readjust idle speed and check synchronization.

Remove the vacuum gauge adaptors and install the removed parts in the reverse order of disassembly.

VACUUM ON RIGHT CARBURETOR INCREASES
VACUUM ON RIGHT CARBURETOR DECREASES

ADJUSTING SCREW



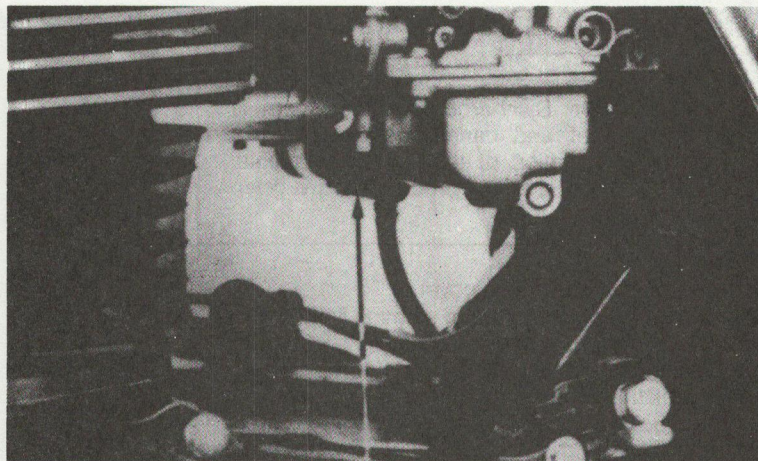
IDLE SPEED ADJUSTMENT

NOTE

Adjust idle after the carburetor synchronization. The engine must be warm for accurate idle adjustment. Ten minutes of stop-and-go running should be sufficient.

Warm up the engine, shift to NEUTRAL, and put the motorcycle on its center stand. Turn the throttle stop screw as required to obtain the specified idle speed.

IDLE SPEED: 1,200 $\pm$ 100 rpm

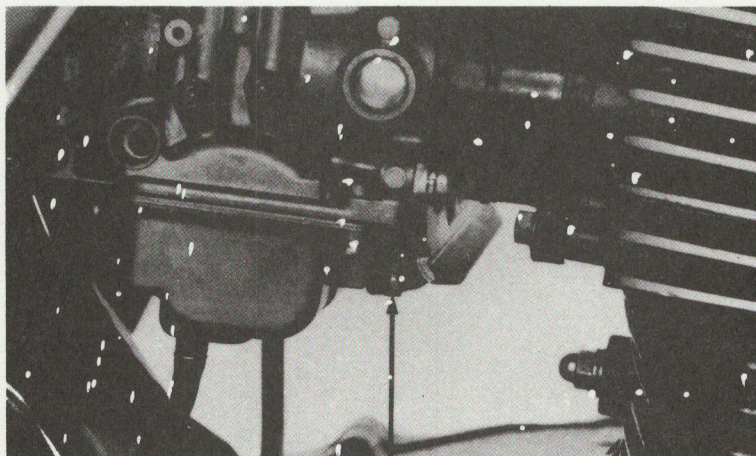


THROTTLE STOP SCREW

If pilot screw adjustment is required, turn each pilot screw to find the highest idle speed. Reset idle speed by means of the throttle stop screw. Repeat this sequence once.

NOTE

Turning pilot screw in produces lean fuel mixture; turning out produces a rich fuel mixture.



PILOT SCREW

IGNITION TIMING**NOTE**

The Capacitive Discharge Ignition system is factory pre-set and cannot be adjusted. To inspect the function of the CDI components, ignition timing inspection procedures are given here.

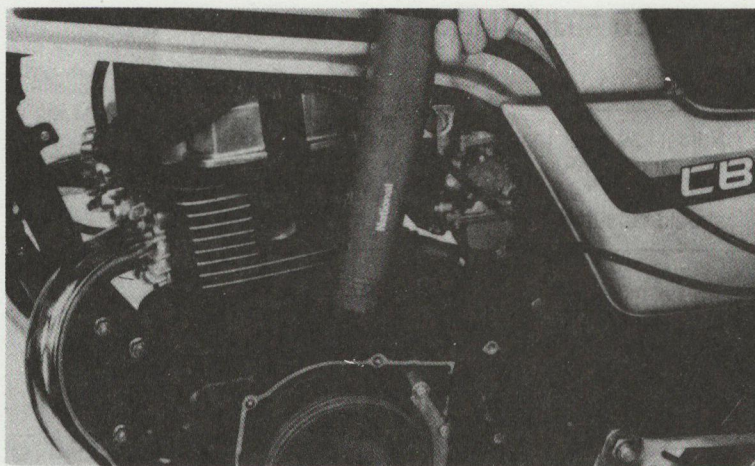
Remove the left crankcase cover.

Check the ignition timing using a timing light.

Timing is correct if the index mark aligns with the "F" mark at idle.

Also check that the index mark is between the advance marks at 5,350 rpm.

If the ignition timing is incorrect, check the CDI unit and AC generator and replace any faulty parts.



COMPRESSION TEST

Warm up the engine to normal operating temperature. Stop the engine, disconnect both spark plug caps and remove one spark plug from each cylinder.

Insert the compression gauge. Open the throttle all the way and crank the engine with the starter motor. Crank the engine until the gauge reading stops rising. The maximum reading is usually reached within 4-7 seconds.

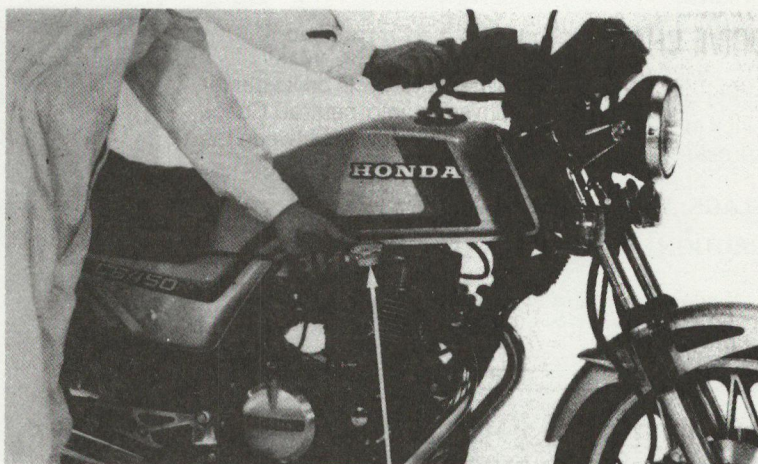
COMPRESSION PRESSURE:

1,270 ± 98 kPa (13 ± 1 kg/cm², 185 ± 14 psi)

If the compression pressure is low, check the following possible faults:

- Leaky valves
- Improper valve tappet clearance
- Blown cylinder head gasket
- Worn piston/cylinder

If the compression is high, it indicates that carbon deposits have accumulated on the combustion chamber wall or on the piston top.



COMPRESSION GAUGE

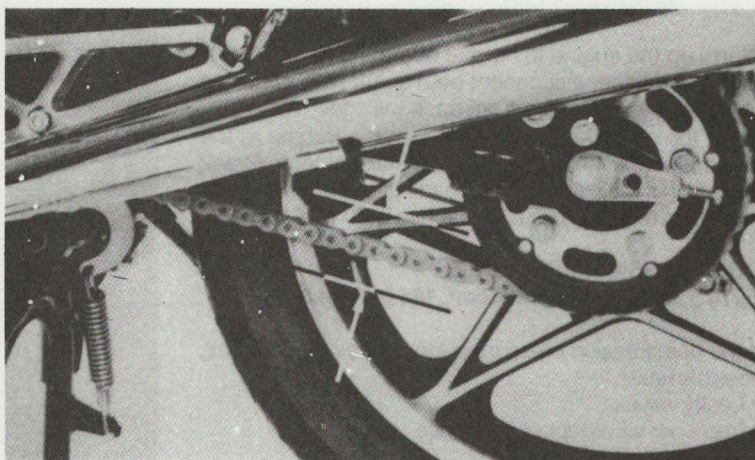
FRAME DRIVE CHAIN

Turn the engine off, place the motorcycle on its center stand and shift the transmission into neutral. Check slack in the drive chain lower run midway between the sprockets.

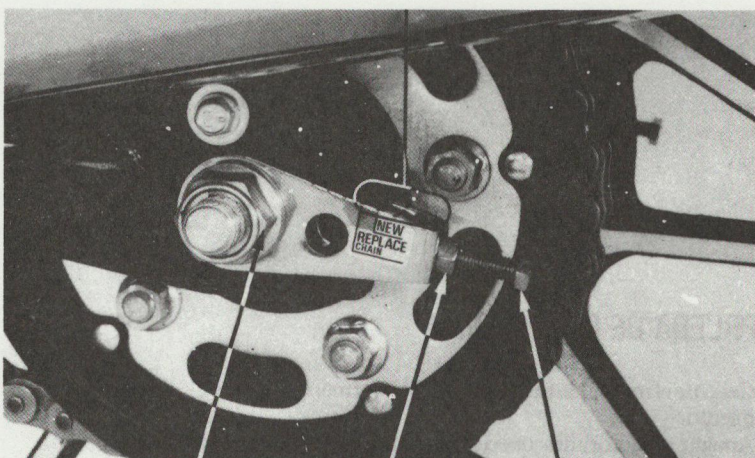
SLACK: 15—25 mm (5/8—1 in)

CAUTION

Excessive chain slack, 50 mm (2 in) or more, may damage the frame.



GRADUATED SCALE



AXLE NUT

LOCK NUT

ADJUSTING BOLT

Adjust as follows:

Loosen the axle nut.

Loosen the adjusting bolt lock nuts.

Turn both adjusting bolts an equal number of turns until the correct drive chain slack is obtained.

CAUTION

Make sure that the same alignment marks on both adjusting plates align with the ends of the swingarm.

Tighten the adjusting bolt lock nuts.

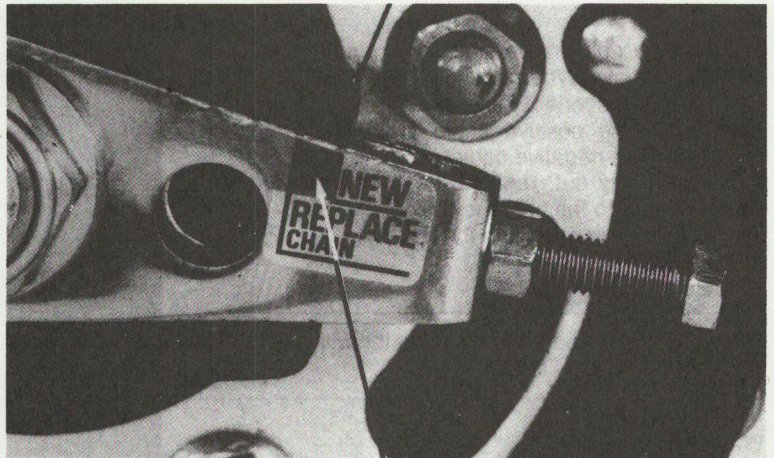
Tighten the rear axle nut.

TORQUE: 70—100 N.m (7.0—10.0 kg.m, 51—72 ft.lb)

REAR END OF SWINGARM

Recheck chain slack and free wheel rotation.
Lubricate the drive chain with SAE 80 or 90 gear oil.
Check the chain wear label. If the red zone on the label aligns with, the rear end of the swing arm or is beyond it after the chain has been adjusted, the chain must be replaced.

REPLACEMENT CHAIN: 150 VC or RK50FS

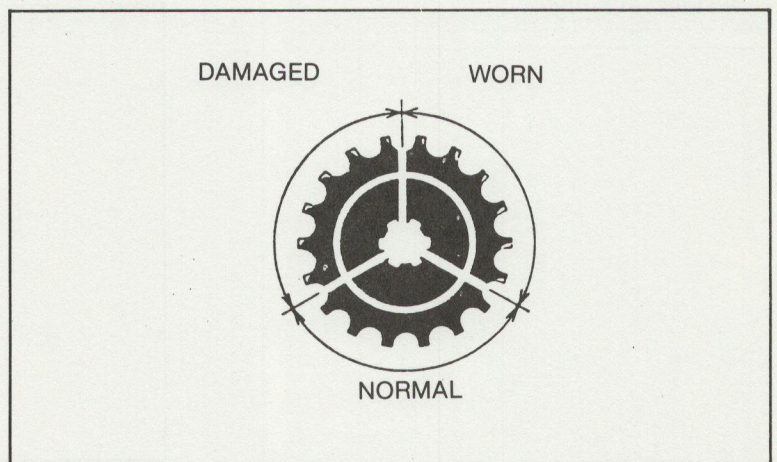


RED ZONE

Inspect the drive chain and sprockets for damage or wear. A drive chain with damaged rollers, loose pins, or missing O-rings must be replaced. Replace any sprocket which is damaged or excessively worn.

NOTE

Never install a new drive chain on worn sprockets or a worn drive chain on new sprockets. Both chain and sprockets must be in good condition or the replacement chain or sprockets will wear rapidly.



BATTERY

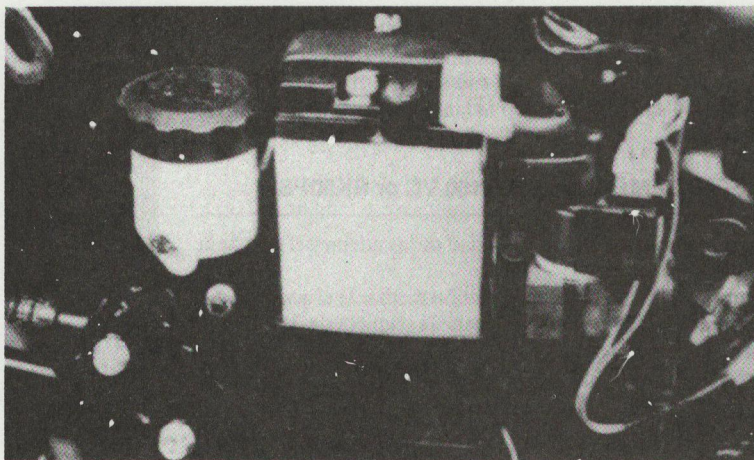
Remove the right frame side cover and inspect the battery fluid level. When the fluid level approaches the lower level, disconnect the battery breather tube. Disconnect the positive cable at the battery, then disconnect the negative cable. Pull the battery out, remove the filler caps and add distilled water to the upper level line. Reinstall the filler caps and the battery.

NOTE

Add only distilled water. Tap water will shorten the service life of the battery.

WARNING

The battery electrolyte contains sulphuric acid. Protect your eyes, skin, and clothing. If electrolyte gets in your eyes, flush them thoroughly with water and get prompt medical attention.

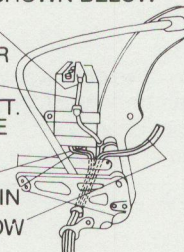
**CAUTION**

PIPING AS SHOWN BELOW

BATT. ELBOW
BATT. BREATHER
TUBE

INSERT THE BATT.
BREATHER TUBE
SECURELY.

AIR/C. DRAIN
BREATHER DRAIN
CARB. OVERFLOW

**CAUTION**

Make sure the breather tube is connected to the battery breather outlet.

BRAKE FLUID LEVEL

Check that the brake fluid reservoir is filled to the upper level mark. If the level is near the lower level mark, fill the reservoir up to the upper level mark.

Check the entire system for leaks if the level is low.

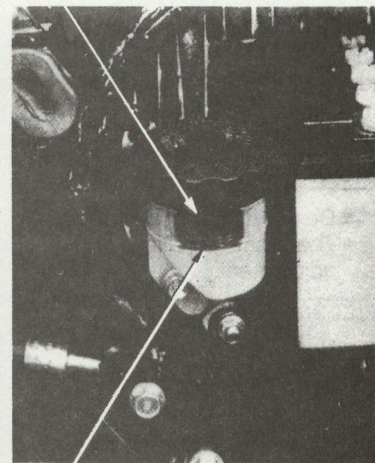
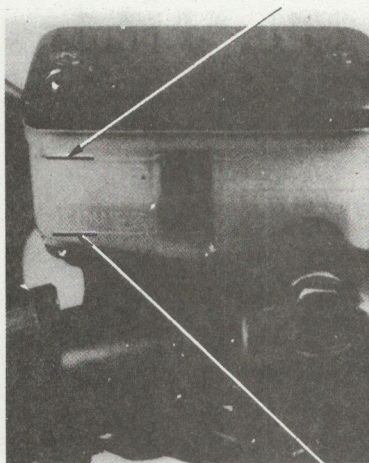
CAUTION

- *When adding brake fluid be sure the reservoir is horizontal before the cap is removed or brake fluid may spill out.*
- *Use only DOT 3 or DOT 4 brake fluid from a sealed container.*
- *Handle brake fluid with care because it can damage paint and instrument lenses.*
- *Never allow contaminants (dirt, water, etc.) to enter the brake fluid reservoir.*

FRONT

UPPER LEVEL MARK

REAR



LOWER LEVEL MARK

BRAKE PAD WEAR

Check the brake pad for wear.

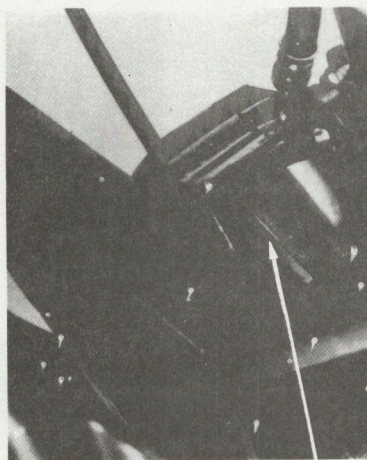
Replace the brake pads if the red line on the top of the pads reaches the edge of the brake disc. (Refer to Section 12).

CAUTION

Always replace the brake pads in pair to assure even disc pressure.

FRONT BRAKE

REAR BRAKE



RED LINE

ADJUSTING

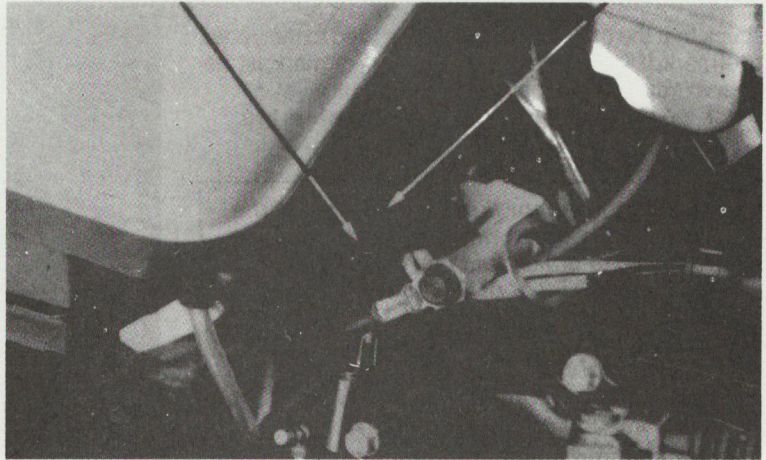
STOP LIGHT SWITCH

STOP LIGHT SWITCH

Adjust the stop light switch so that the stop light will come on when the brake begins engagement. Adjust by turning the switch nut.

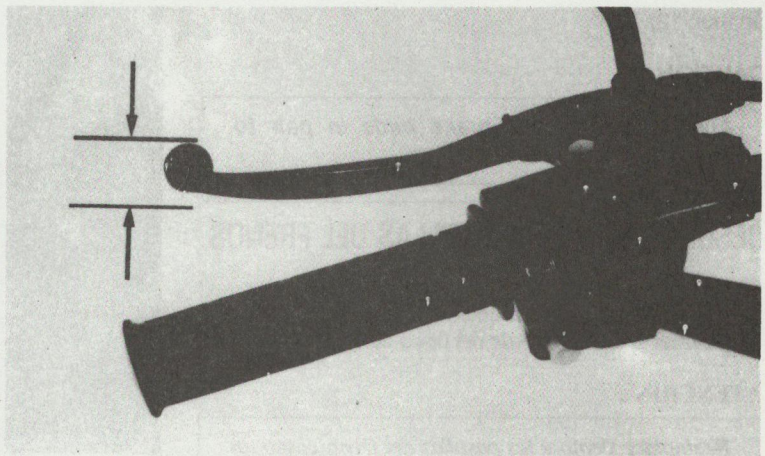
NOTE

- Do not turn the switch body.
- The front stop light switch does not require adjustment.

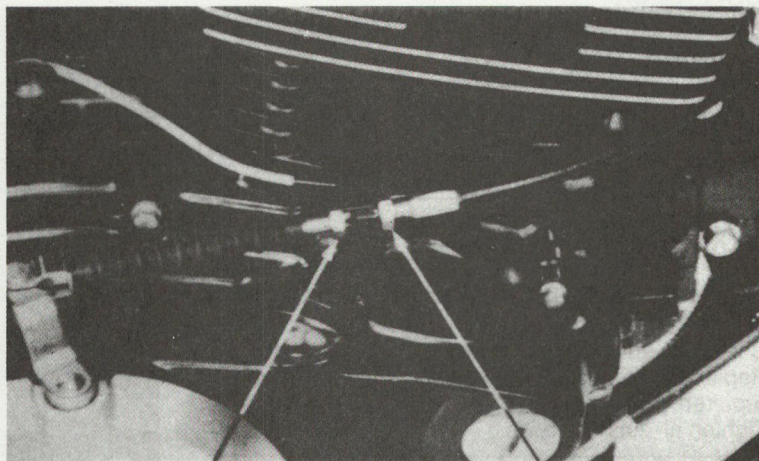
**CLUTCH**

Measure the clutch lever free play at the end of the lever.

FREE PLAY: 10—20 mm (3/8—3/4 in)



Major adjustments should be made using the adjuster at the clutch housing. Loosen the lock nut and turn the clutch cable adjusting nut. Tighten the lock nut.



LOCK NUT

ADJUSTING NUT

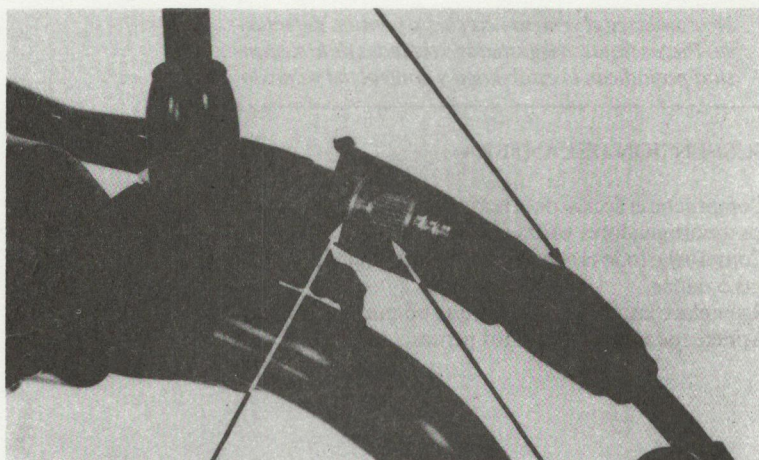
DUST COVER

Minor adjustments can be made by means of the clutch cable adjuster on the clutch lever. Pull back the dust cover, loosen the lock nut and turn the adjuster.

NOTE

Do not expose the threads of the adjuster more than 8 mm (3/8 in).

Recheck the clutch operation.



LOCK NUT

ADJUSTER

SUSPENSION

WARNING

Do not ride a vehicle with faulty suspension. Loose, worn or damaged suspension parts impair vehicle stability and control.

FRONT

Check the action of the front forks by compressing them several times.

Check the entire fork assembly for leaks or damage. Replace damaged components which cannot be repaired.

Tighten all nuts and bolts.



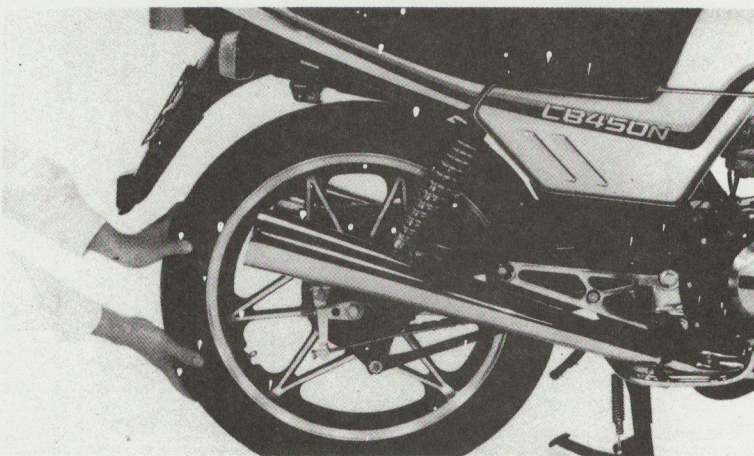
REAR

Place the motorcycle on its center stand.

Move the rear wheel sideways with force to check swingarm bushing wear.

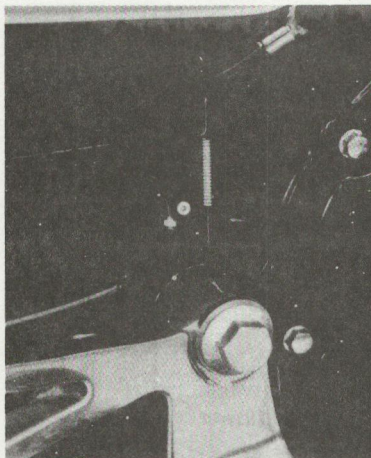
Replace the bushings if they are excessively worn.

Check the entire suspension assembly to see if it is securely mounted, damaged or distorted.



SWINGARM PIVOTS

Two lubrication points are located as shown.
Use multipurpose grease, Type NLGI No. 2.

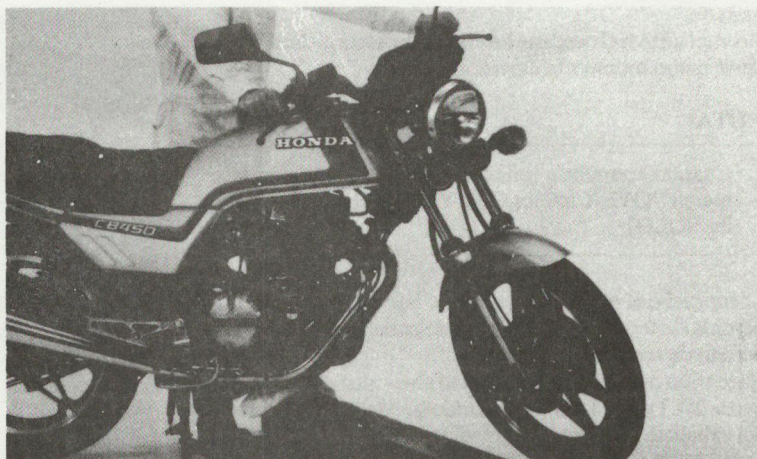


STEERING HEAD BEARING

NOTE

Check that the control cables do not interfere with handlebar rotation.

Raise the front wheel off the ground.
Check that the handlebar rotates freely.
If the handlebar moves unevenly, binds, or has vertical movement, adjust the steering head bearing by turning the steering head adjusting nut.



SIDE STAND

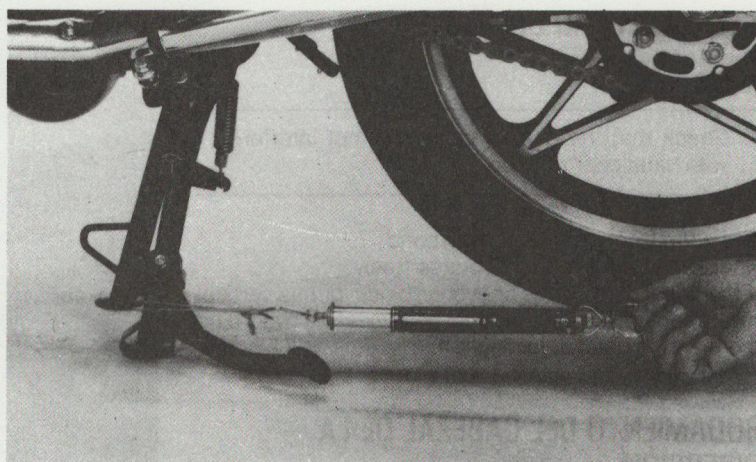
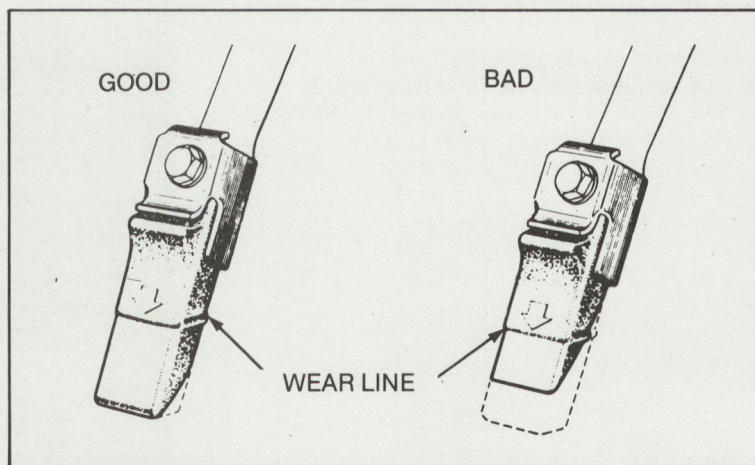
Check the rubber pad for deterioration or wear. Replace it if any wear extends to wear line as shown.

NOTE

When replacing, use a rubber pad with the mark "OVER 260 lbs ONLY".

Check the side stand spring for damage and loss of tension, and the side stand assembly for freedom of movement.

Spring tension is correct if the measurement falls within 2—3 kg (4.4—6.6 lbs) when pulling the side stand lower end by means of a spring scale.



WHEELS

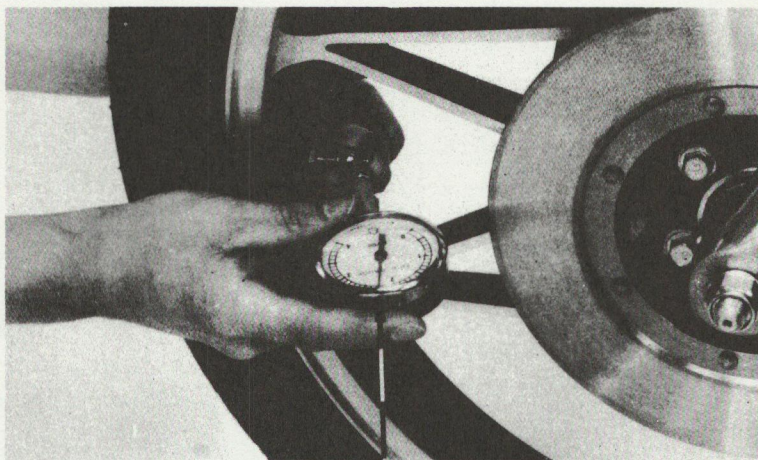
TIRE PRESSURE

NOTE

Tire pressure should be checked when tires are COLD.

Check the tire for cuts, imbedded nails, or other sharp objects.

Cold tire pressures kPa (kg/cm ² , psi)	RIDER ONLY	Front: 225 (2.25, 32) Rear: 225 (2.25, 32)
	RIDER AND PASSENGER	Front: 225 (2.25, 32) Rear: 250 (2.50, 36)

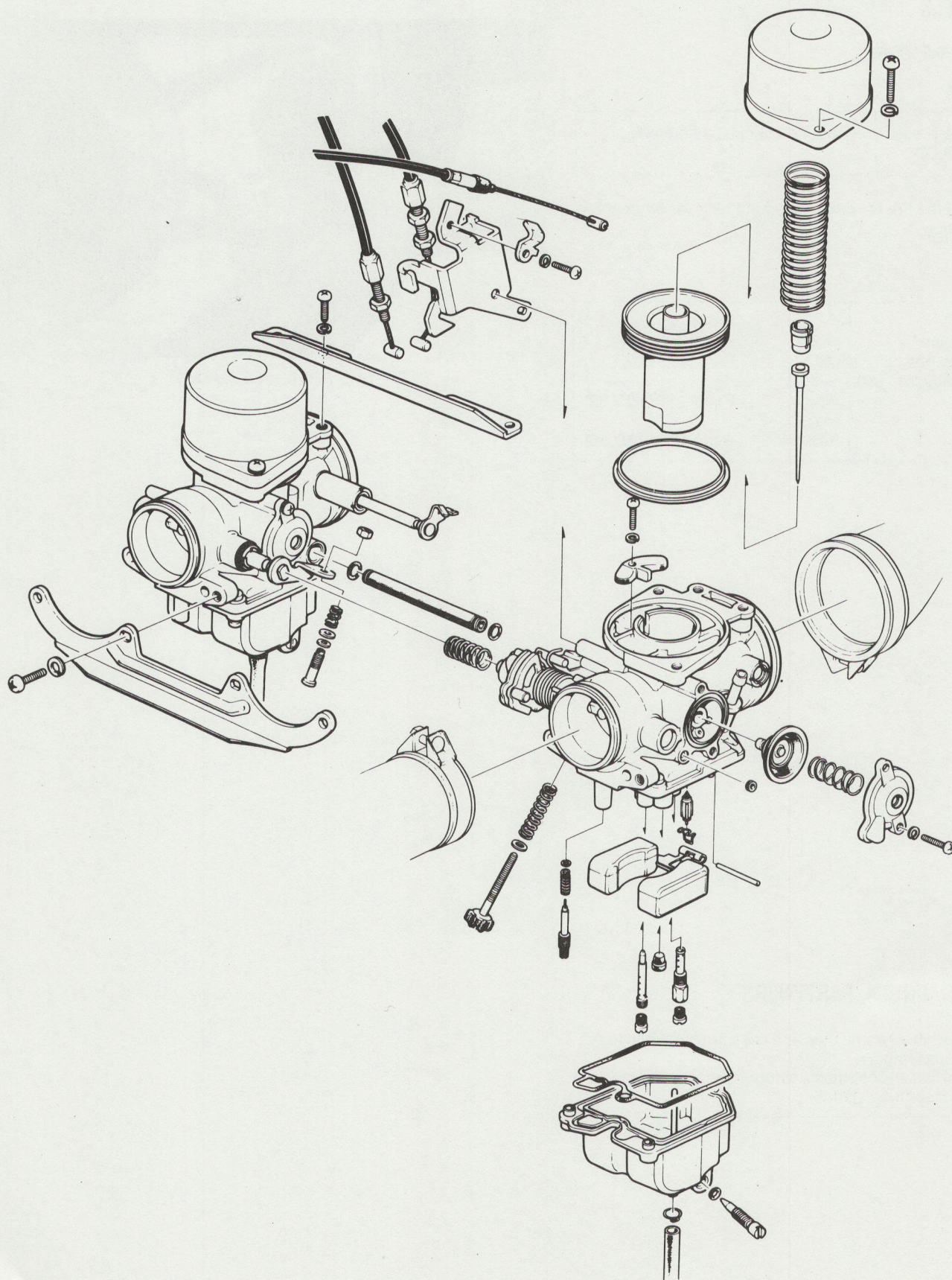


TIRE PRESSURE GAUGE

NUTS, BOLTS, FASTENERS

Check that all frame nuts and bolts are tightened to correct torque values.

Check that all cotter pins, safety clips, hose clamps and cable stays are in place.



SERVICE INFORMATION	4—1	AIR CUTOFF VALVE DISASSEMBLY	4—8
TROUBLESHOOTING	4—1	COMPONENT ASSEMBLY	4—8
CARBURETOR REMOVAL	4—2	FLOAT LEVEL ADJUSTMENT	4—9
CARBURETOR SEPARATION	4—3	CARBURETOR ASSEMBLY	4—9
VACUUM CYLINDER DISASSEMBLY	4—5	CARBURETOR INSTALLATION	4—10
FLOAT CHAMBER DISASSEMBLY	4—6		

SERVICE INFORMATION

WARNING

Gasoline is extremely flammable and is explosive under certain conditions. Work in a well ventilated area. Do not smoke or allow flames or sparks in the work area.

- When disassembling fuel system parts, note the locations of the O-rings. Replace them during assembly.
- The float chambers have drain plugs that can be loosened to drain residual gasoline.

SPECIFICATIONS

Venturi dia.	32 mm
Setting mark	VB31G
Float level	15.5 mm (0.61 in)
Pilot screw opening	1-3/4
Idle speed	1,200 $\pm$ 100 rpm
Vacuum (at idle speed)	200—240 mm Hg
Throttle grip free play	2—6 mm (0.08—0.24 in)

SPECIAL TOOL

Common Tool
FLOAT GAUGE 07401—0010000

TROUBLESHOOTING

Engine cranks but won't start

1. No fuel in tank
2. No fuel to cylinders
3. Too much fuel getting to cylinders
4. No spark at plugs (ignition malfunction)
5. Clogged air cleaner

Engine idles roughly, stalls, or runs poorly

1. Incorrect idle speed
2. Ignition malfunction
3. Low compression
4. Rich mixture
5. Lean mixture
6. Clogged air cleaner
7. Air leaking into manifold
8. Contaminated fuel
9. Carburetors not synchronized

Lean Mixture

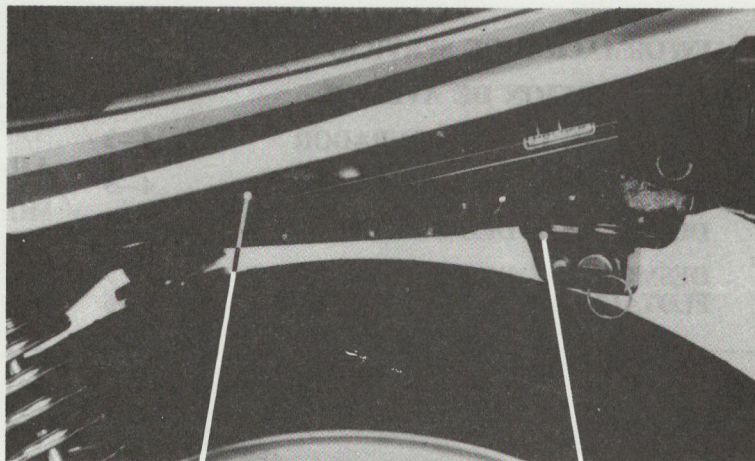
1. Clogged carburetor fuel jets
2. Vacuum piston stuck closed
3. Blocked fuel cap vent
4. Clogged fuel filter
5. Kinked or restricted fuel line
6. Faulty float valve
7. Too low float level

Rich Mixture

1. Choke stuck closed
2. Faulty float valve
3. Too high float level
4. Clogged carburetor air jets

CARBURETOR REMOVAL

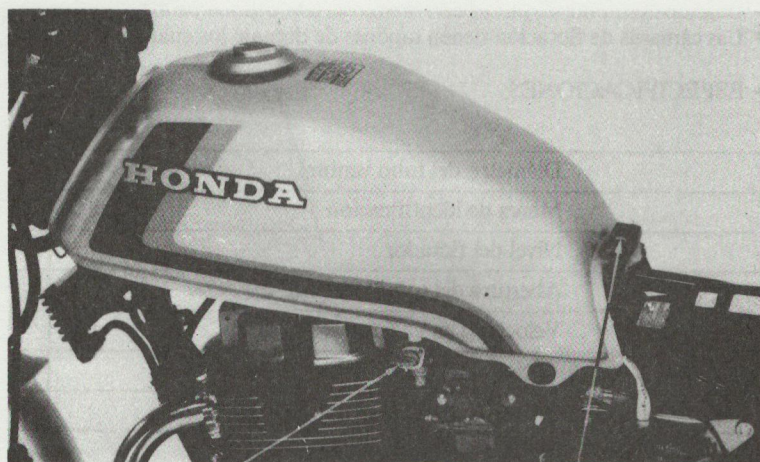
Insert the ignition key, turn it counterclockwise and unhook the seat ring from the helmet holder. Pull the latches on the both sides backward and remove the seat.



LATCH

RING

Turn the fuel valve OFF.
Remove the fuel tank mount bolt.
Disconnect the fuel gauge coupler.
Remove the fuel tank.



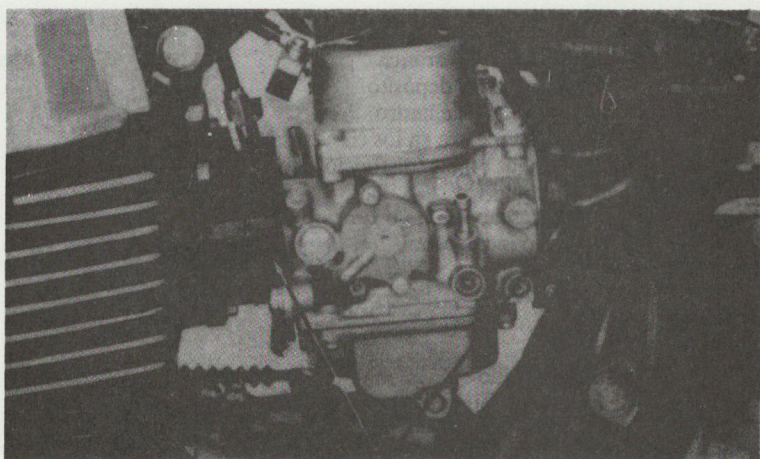
FUEL VALVE

MOUNT BOLT

Loosen the screws securing the carburetor bands.
Remove the carburetors.

CAUTION

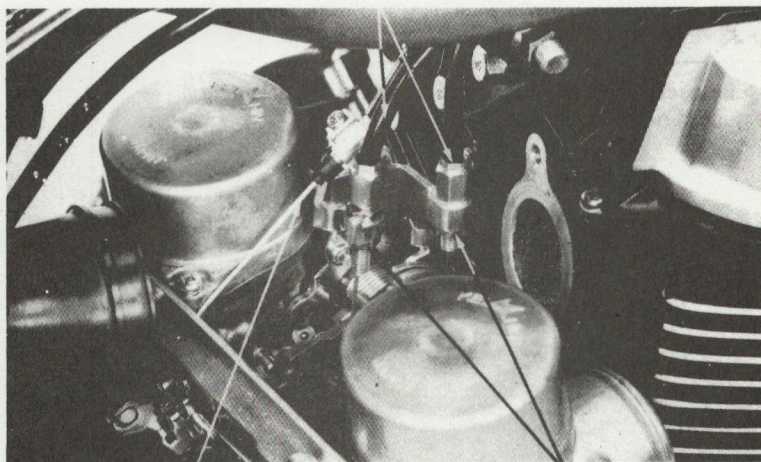
Do not pry the carburetors off the engine. Push down the carburetors while carefully pulling them back evenly.



CARBURETOR BANDS

THROTTLE CABLES

Unscrew the lock nuts and disconnect the throttle cables at the carburetors.
Remove the clamp holding the choke cable and disconnect the choke cable.

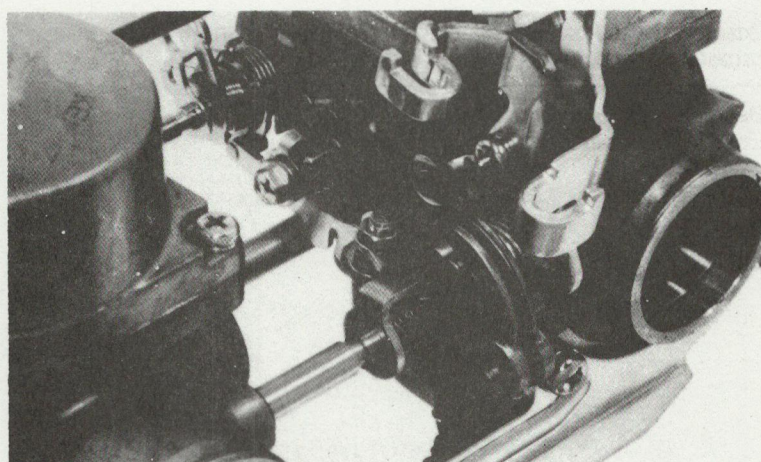


CHOKE CABLE

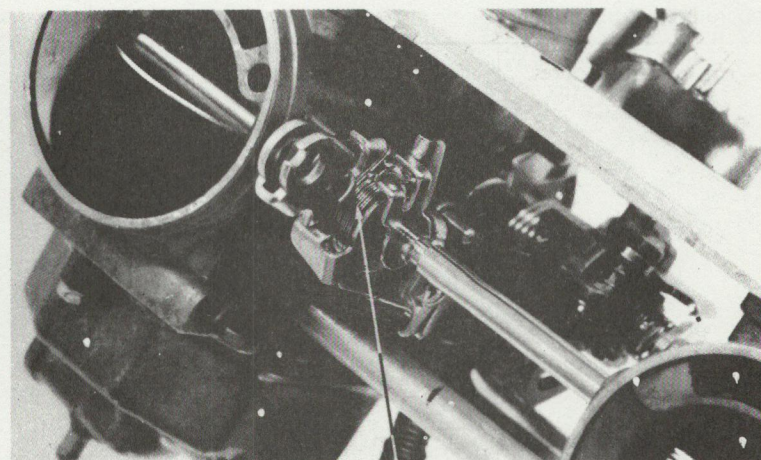
LOCK NUTS

CARBURETOR SEPARATION

Loosen the synchronization adjusting screw.

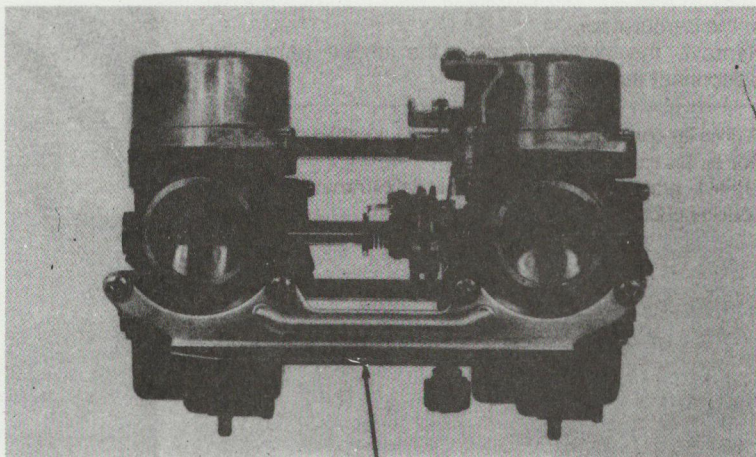


Disconnect the choke relief spring from the choke lever.



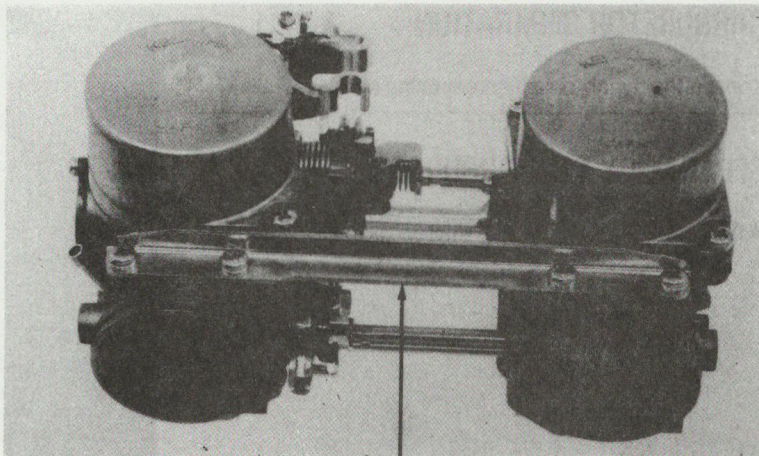
RELIEF SPRING

Remove the four screws attaching the front stay, and remove the front stay.



FRONT STAY

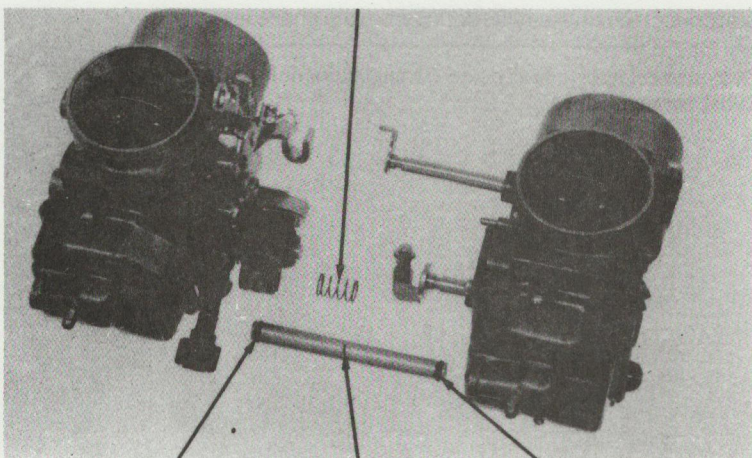
Unscrew the four screws attaching the rear stay to the carburetors, and remove the rear stay.



REAR STAY

SPRING

Separate the carburetors.



O-RING

FUEL JOINT PIPE

O-RING

VACUUM CYLINDER DISASSEMBLY

Remove the vacuum cylinders from the carburetor bodies.

Carefully lift the vacuum piston out with its needle and compression spring.

NOTE

Inspect the vacuum piston and cylinder for wear, nicks, scratches or other damage. Make sure that the piston moves up and down freely in the cylinder.

Remove the full opening stopper.

Remove the needle set screw.

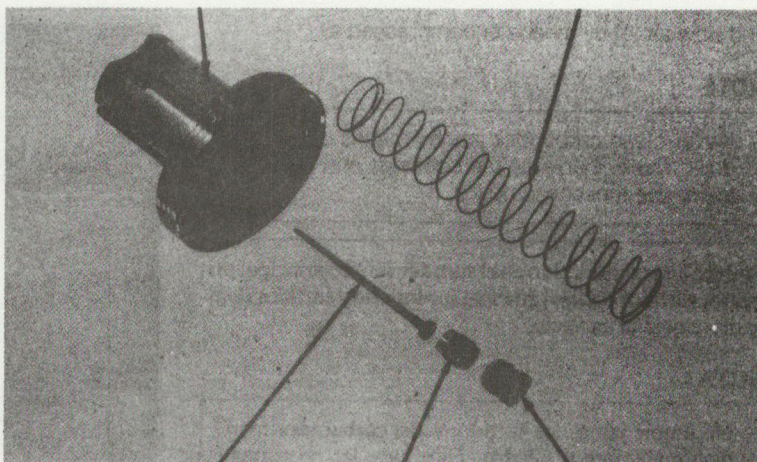
Separate the jet needle from the piston.

NOTE

Inspect the needle and seat for deposits, grooves, or other damage.

VACUUM PISTON

COMPRESSION SPRING

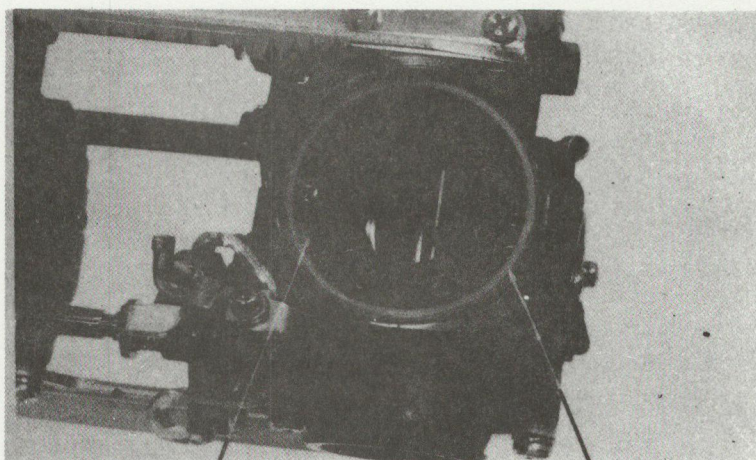


JET NEEDLE

NEEDLE SET SCREW

FULL OPENING

Carefully lift the seal ring off the carburetor body.
Remove the air jet cover.



AIR JET COVER

SEAL RING

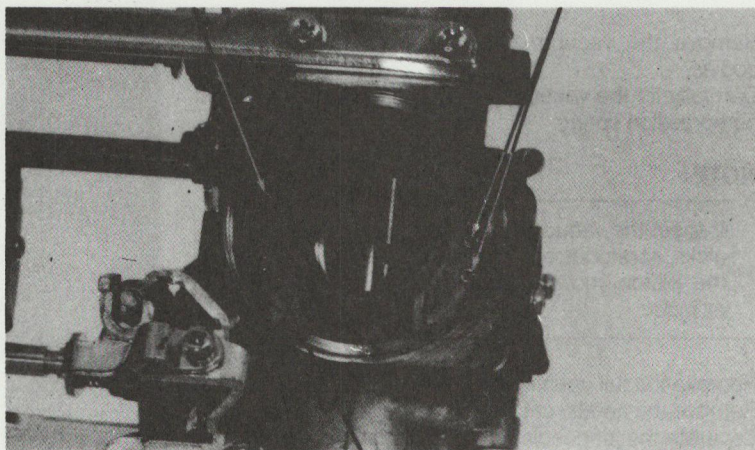
Blow open the primary main air jet, secondary main air jet and slow air jet by means of compressed air.

NOTE

Never clean carburetor jets by means of wire or drills. This will enlarge the openings and result in excessive fuel consumption.

SECONDARY MAIN AIR JET

SLOW AIR JETS



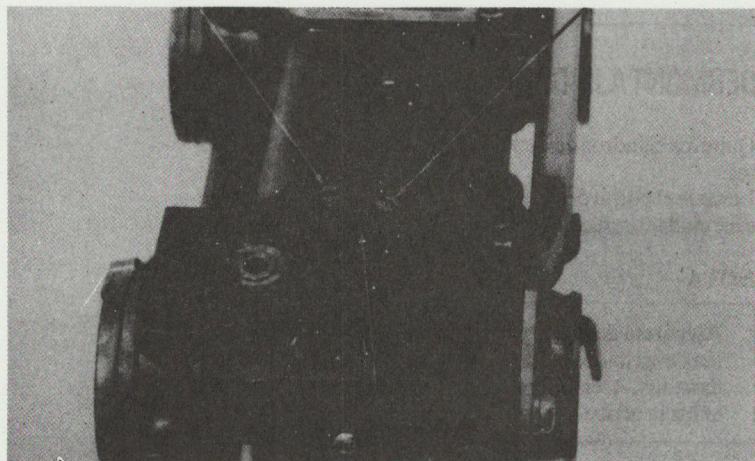
PRIMARY MAIN AIR JET

SECONDARY MAIN JET

PRIMARY MAIN JET

FLOAT CHAMBER DISASSEMBLY

Remove the float chamber body.
Remove the secondary main jet.
Remove the primary main jet.
Remove the slow jet plug.



SLOW JET PLUG

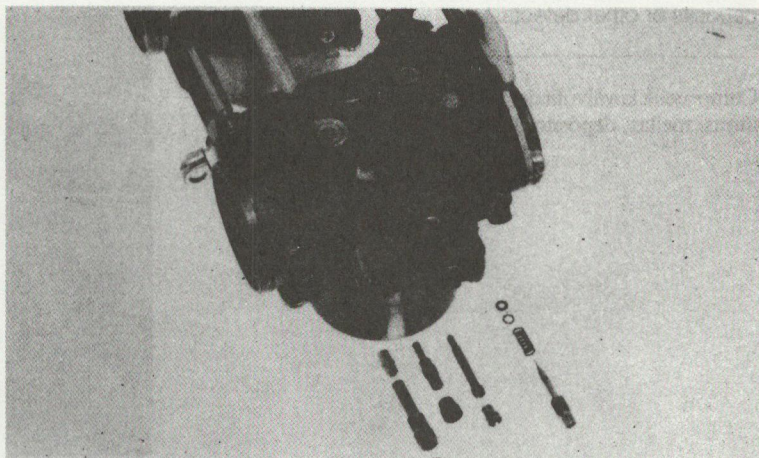
NOTE

The slow air jet cannot be removed since it is a tight press fit in the carburetor.

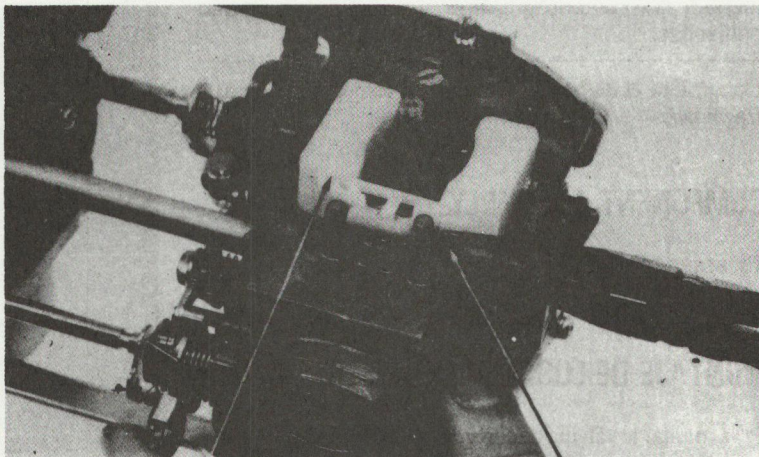
Take out the primary nozzle.
Remove the jet needle holder.
Blow open all jets and body openings by means of compressed air.

NOTE

Before removing the pilot screw, record the number of rotations until it seats.



Pry off the float arm pin by means of a pair of pliers.
Remove the float and the float valve.

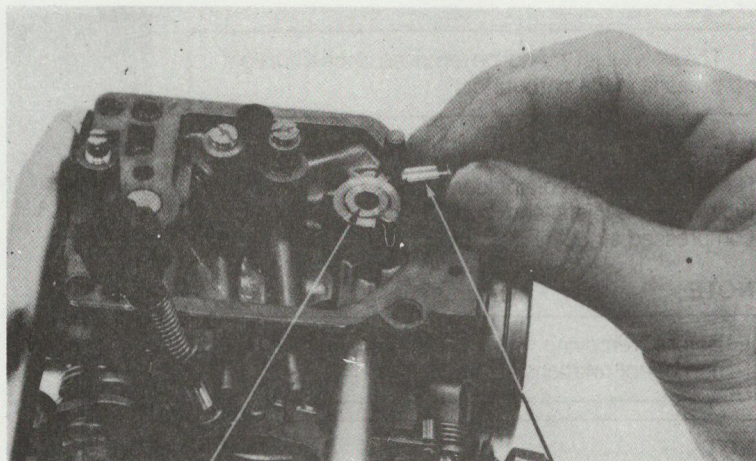


FLOAT

FLOAT ARM PIN

FUEL SYSTEM

Inspect the float valve and seat for grooves, nicks, deposits or other defects.



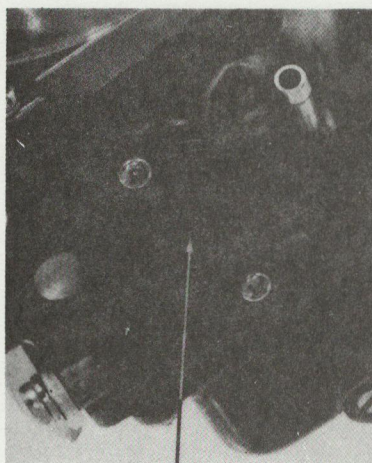
VALVE SEAT

VALVE

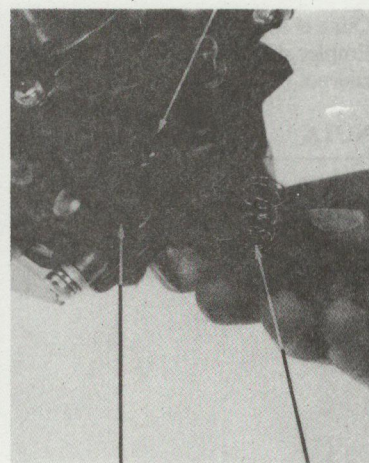
DIAPHRAGM

AIR CUTOFF VALVE DISASSEMBLY

Remove the air cutoff valve cover and pull out the spring.
Remove the diaphragm.
Take out the O-ring.



AIR CUTOFF VALVE COVER



O-RING

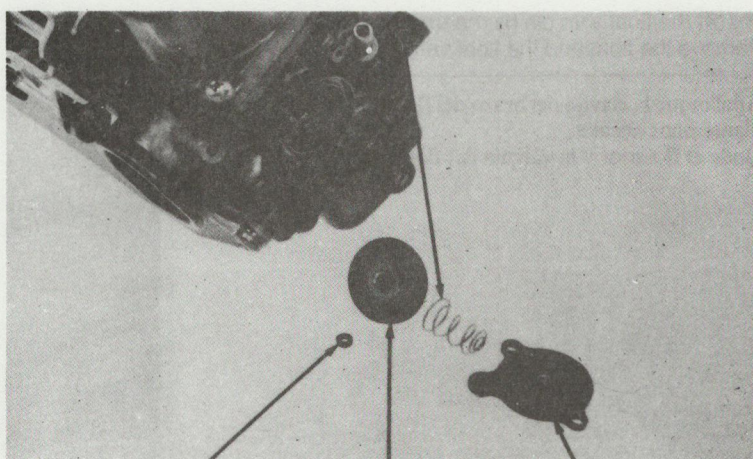
SPRING

SPRING
RESORTE

Inspect the diaphragm and valve for cracks and brittleness.

COMPONENT ASSEMBLY

To assemble the air cutoff valve, float chamber and vacuum cylinder, reverse the disassembly procedure.



O-RING

DIAPHRAGM

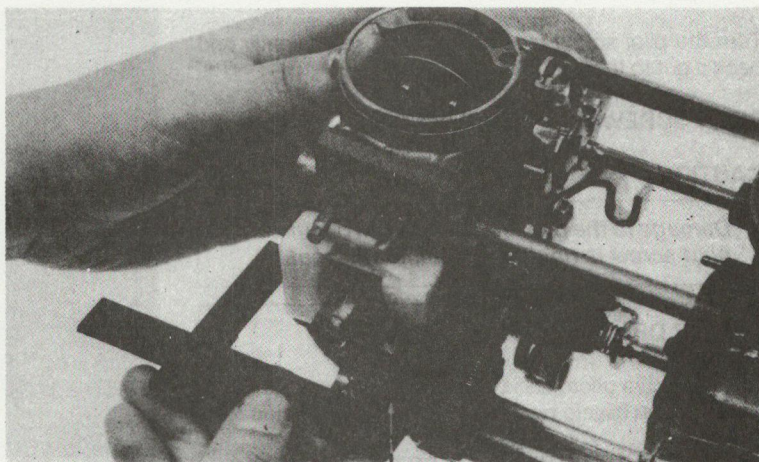
COVER

FLOAT LEVEL ADJUSTMENT

Measure the float level.

FLOAT LEVEL: 15.5 mm (0.61 in.)

Change the float in case the float level is not within the specification.

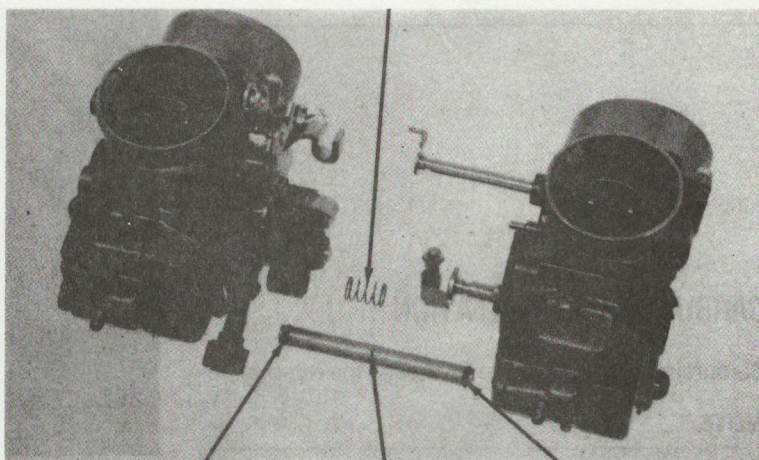


FLOAT LEVEL GAUGE

SPRING

CARBURETOR ASSEMBLY

Slip an O-ring over each end of the fuel joint pipe as shown.
Assemble the right and left carburetors through the spring.



O-RING

FUEL JOINT PIPE

O-RING

FUEL SYSTEM

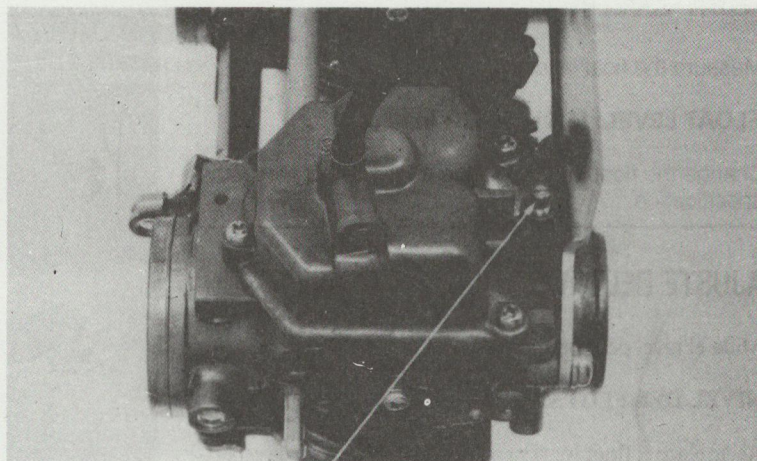
PILOT SCREW ADJUSTMENT

Turn the pilot screw clockwise until it seats lightly and back it out to the specification.

PILOT SCREW OPENING: 1-3/4

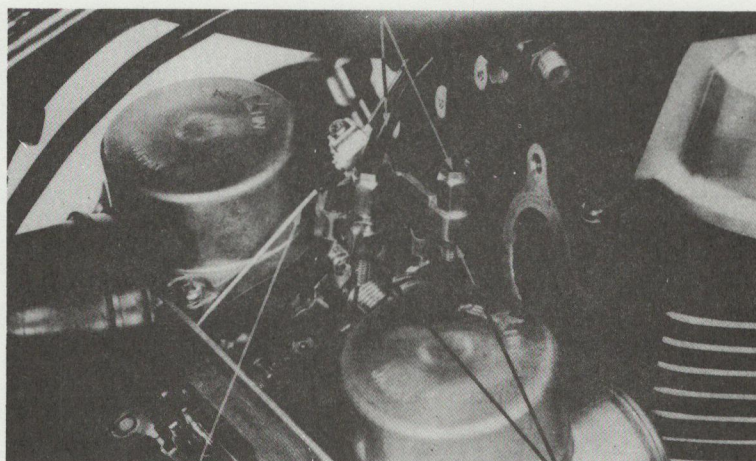
CAUTION

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.



PILOT SCREW

THROTTLE CABLES



CHOKE CABLE

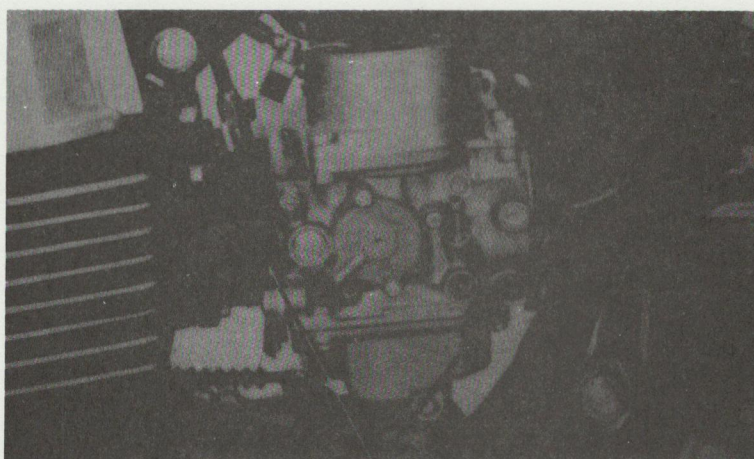
LOCK NUTS

CARBURETOR INSTALLATION

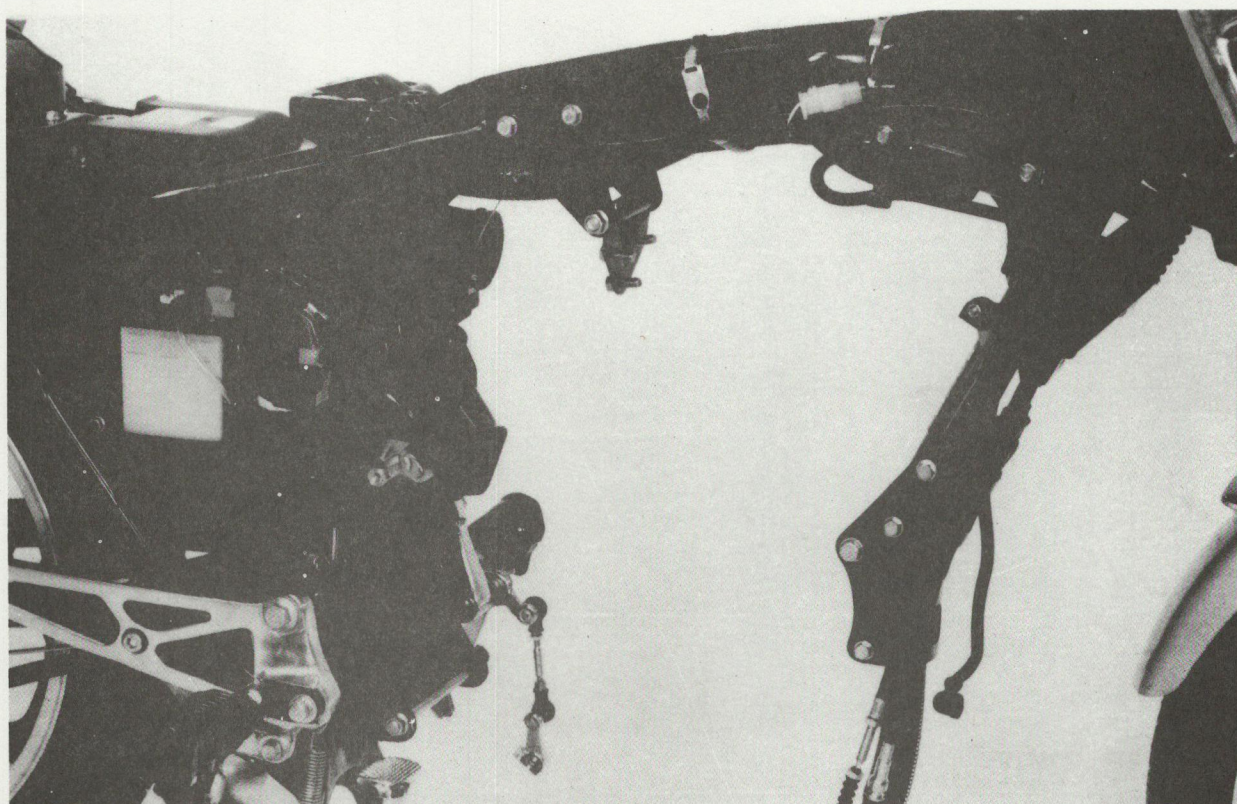
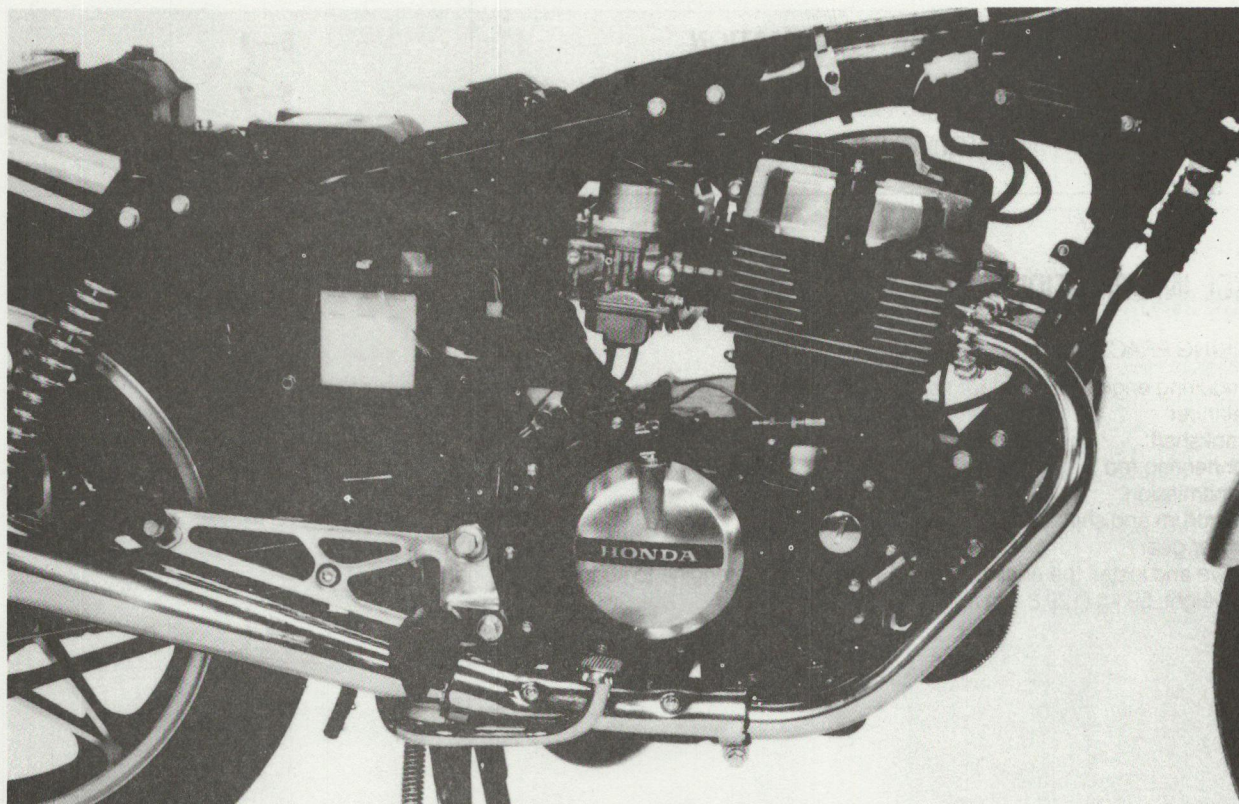
Carburetor installation is the reverse of the removal.

NOTE

- Do not interchange the PULL and PUSH cables.
- After assembly, perform the following adjustments:
 - Throttle grip free play (Section 3).
 - Carburetor synchronization (Section 3).
 - Idle adjustment (Section 3).



CARBURETOR BANDS



5. ENGINE REMOVAL/ INSTALLATION

HONDA®
CB450N

SERVICE INFORMATION	5-1
ENGINE REMOVAL	5-2
ENGINE INSTALLATION	5-6

SERVICE INFORMATION

• WORKING PRACTICE

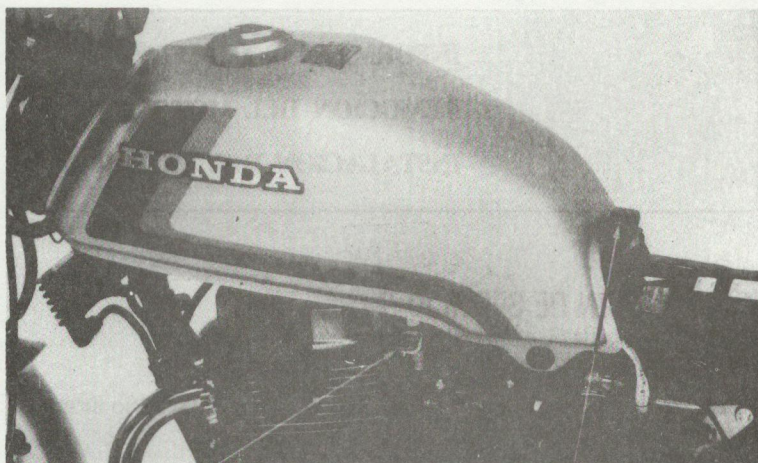
Parts requiring engine removal for servicing:

- Balancer
- Crankshaft
- Connecting rod
- Transmission
- Shift drum and shift fork
- Starter gear

To remove and install the engine, place a jack under the engine to support its weight.
Engine weight: 59 kg (129.8 lbs) approx.

ENGINE REMOVAL

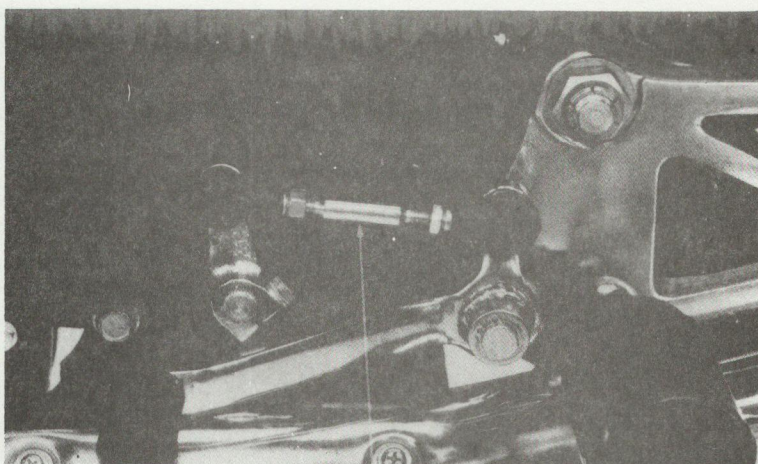
Remove the drain plug to drain the engine oil.
Remove the seat, the fuel tank and the side covers.



FUEL VALVE

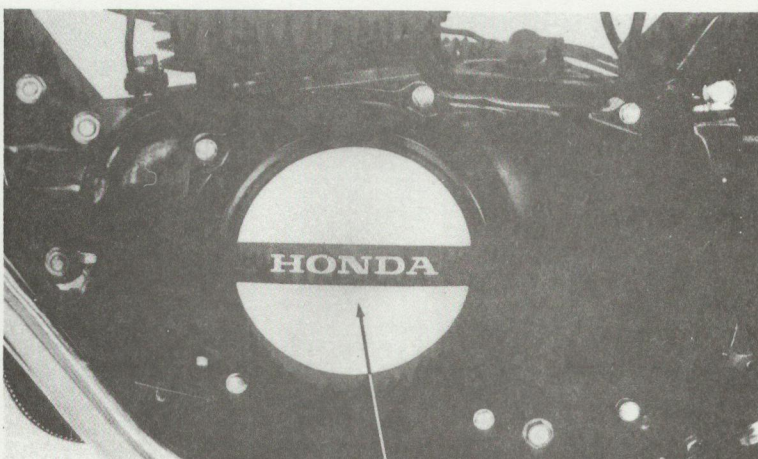
MOUNT BOLT

Remove the gearshift linkage.



GEARSHIFT LINKAGE

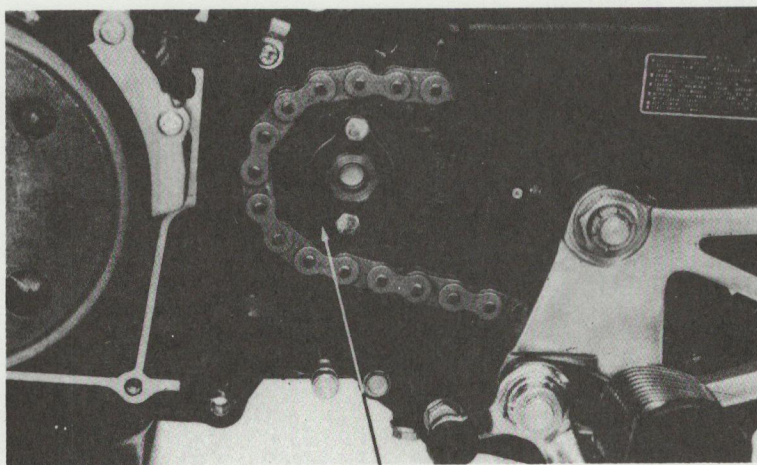
Remove the bolts and the left crankcase cover.



CRANKCASE COVER

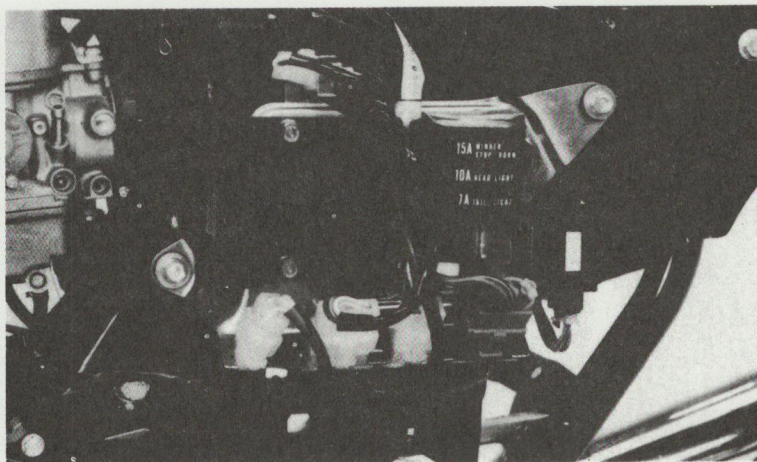
ENGINE REMOVAL / INSTALLATION

Remove the drive sprocket.
Remove the drive chain.



DRIVE SPROCKET

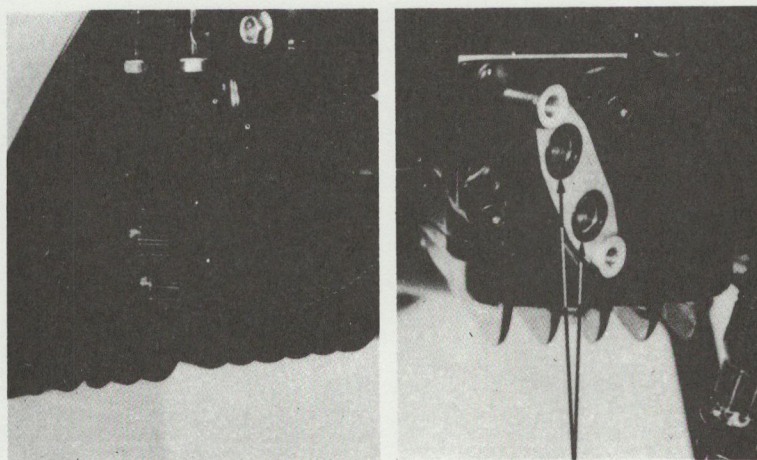
Remove the A.C. generator coupler.



Remove the bolts and separate the oil cooler hoses from the crankcase.

NOTE

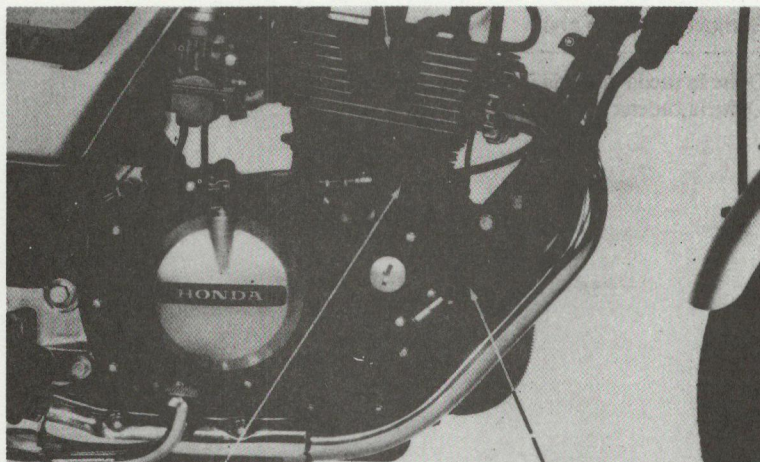
When installing, do not forget the O-rings.



O-RINGS

Remove the spark plug caps.
Disconnect the clutch cable.
Disconnect the tachometer cable.

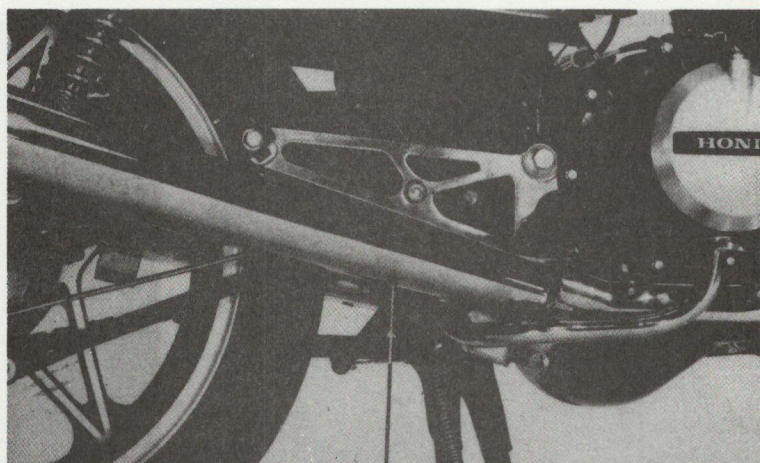
SPARK PLUG CAP



CLUTCH CABLE

TACHOMETER CABLE

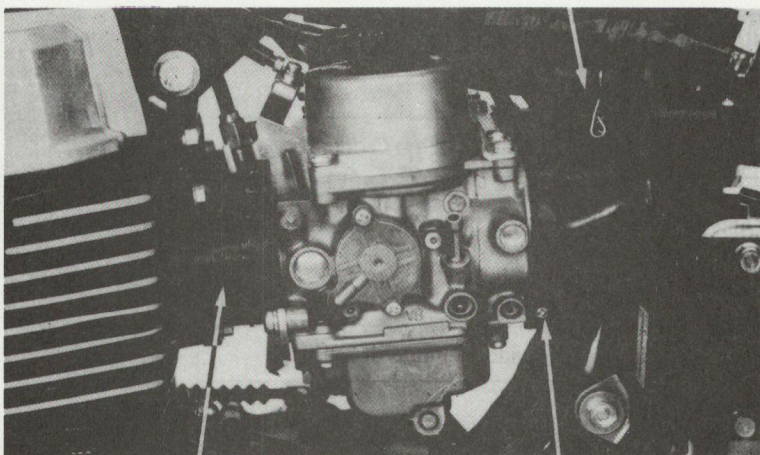
Remove the exhaust mufflers.



MUFFLER

BREATHER TUBE

Disconnect the breather tube.
Remove the bolts attaching the insulators.
Loosen the carburetor band screws.
Remove the carburetors.

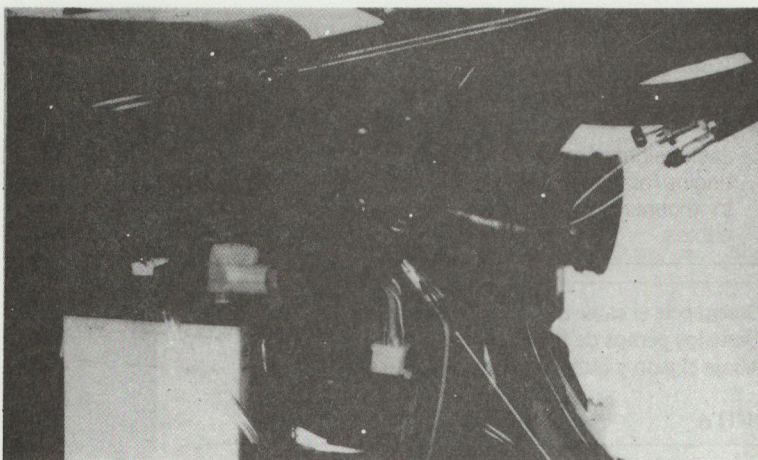


INSULATOR

SCREW

ENGINE REMOVAL / INSTALLATION

Disconnect the oil pressure switch and the neutral switch wires.

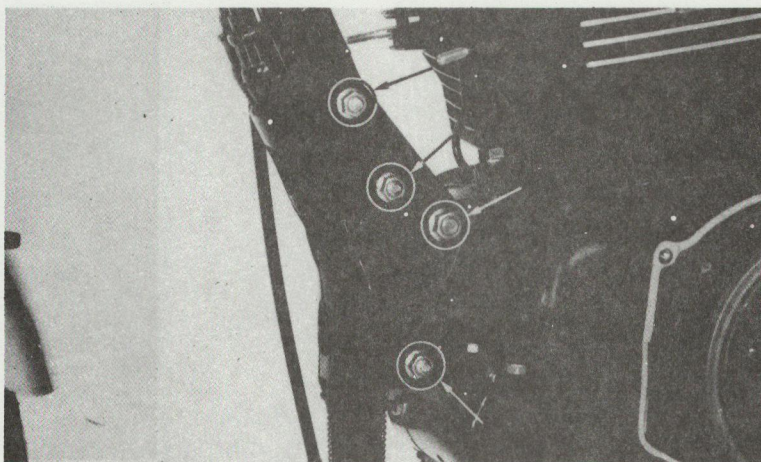


NEUTRAL SWITCH WIRES

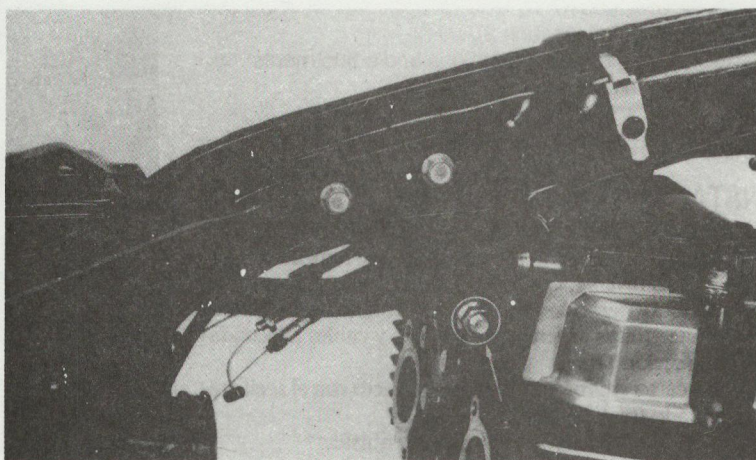
Remove the front engine mounting bracket.

NOTE

Place a jack under the engine to support the engine weight while removing the bolts.



Remove the upper engine hanger bolt.



HONDA®

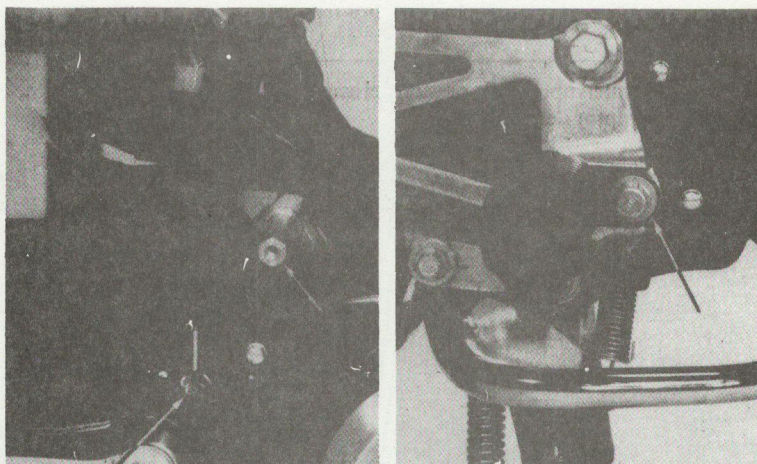
CB450N

ENGINE REMOVAL / INSTALLATION

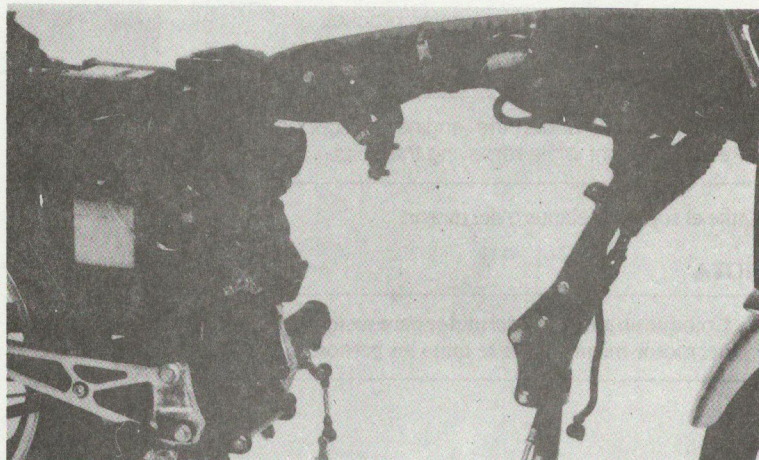
Disconnect the battery negative cable.
Remove the two rear mount bolts.
Lower the jack and remove the engine.

NOTE

Jack height must be continuously adjusted during engine removal and installation to prevent damage to mounting bolt threads, wire harnesses and cables.



BATTERY NEGATIVE CABLE



ENGINE INSTALLATION

Install the engine in the reverse order of removal, noting the following:

Tighten all bolts to the specified torque.

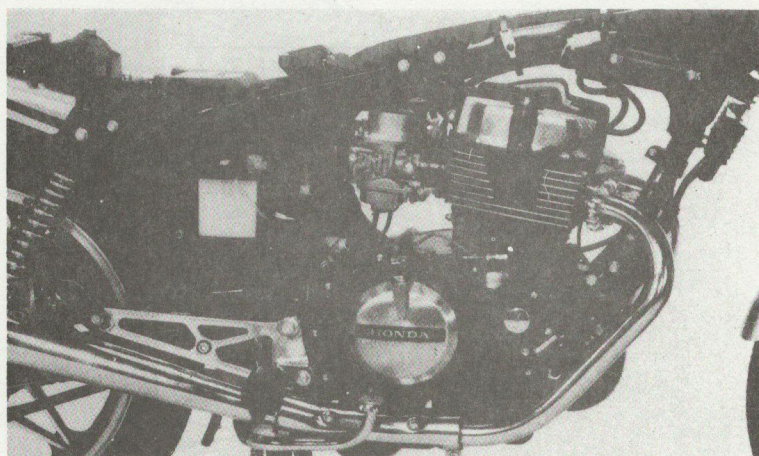
Route all wire harnesses and cables properly (section 1).

Fill the crankcase to the proper level with the recommended oil (section 2).

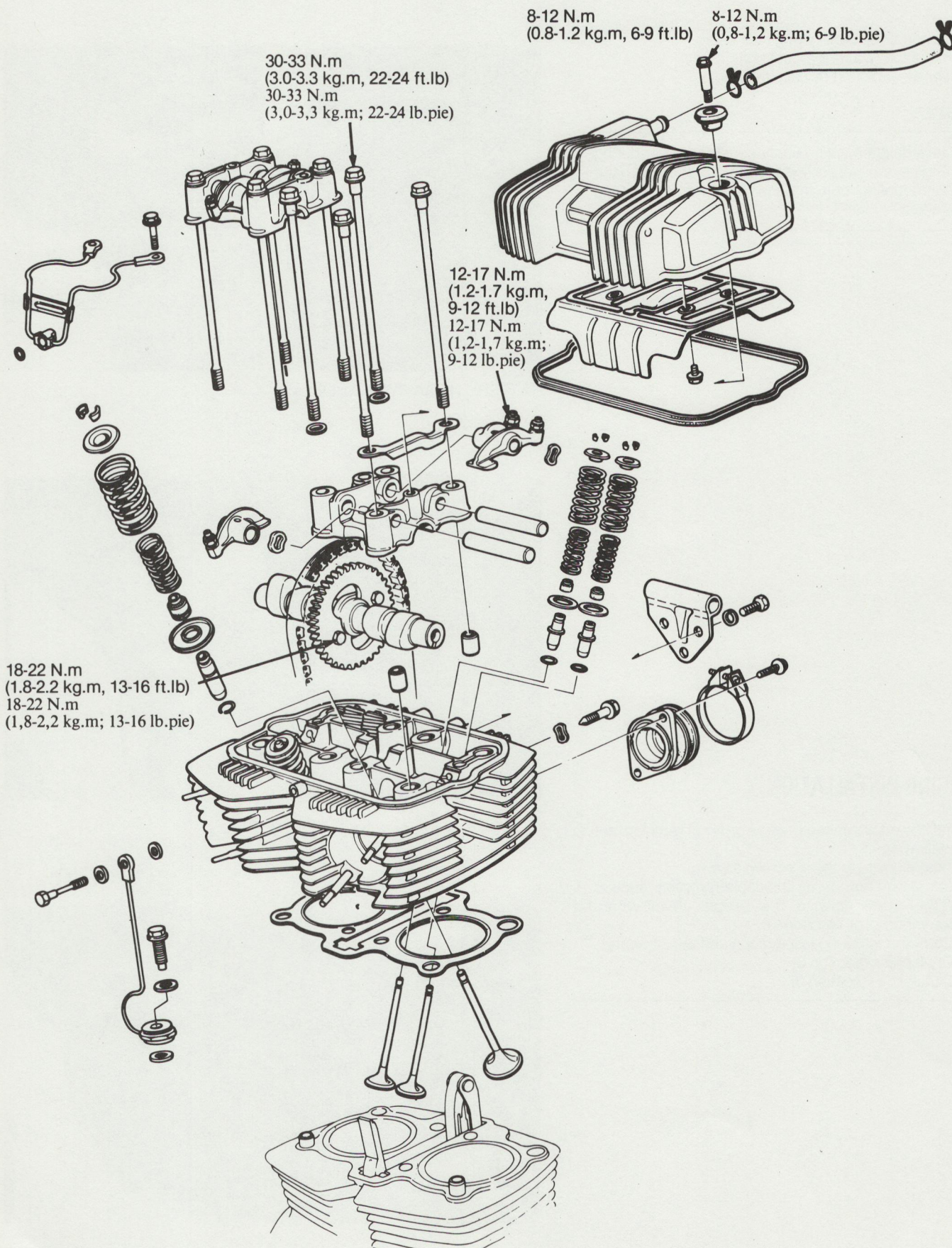
Perform the following inspections and adjustments:

Drive chain (section 3)

Clutch (section 3)



CYLINDER HEAD / VALVES



SERVICE INFORMATION	6-1
TROUBLESHOOTING	6-1
ROCKER ARM/CAMSHAFT REMOVAL	6-3
CYLINDER HEAD REMOVAL	6-10
CYLINDER HEAD DISASSEMBLY	6-11
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VALVE SEAT INSPECTION AND GRINDING	6-15
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ROCKER ARM ASSEMBLY	6-21
CYLINDER HEAD INSTALLATION	6-21
CAMSHAFT AND ROCKER ARM INSTALLATION	6-23

SERVICE INFORMATION

• WORKING PRACTICE

All cylinder head maintenance and inspection can be accomplished with the engine installed.

Camshaft lubricating oil is fed to cylinder head through an oil tube. Be sure this oil tube is not clogged and that the O-ring and the dowel pins are in place before installing the cylinder head.

During assembling, apply molybdenum disulfide to the camshaft bearings to provide initial lubrication. Pour clean engine oil into the oil pockets in the cylinder head to lubricate the cams.

• TOOLS

Special Tools

Valve Guide Reamer (IN)	07984—2000000
Valve Guide Reamer (EX)	07984—6110000

Common Tools

Valve Guide Remover (5.5 mm) (IN)	07742—0010100
Valve Guide Remover (6.6 mm) (EX)	07742—0010200
Valve Spring Compressor	07757—0010000

TROUBLESHOOTING

Engine top-end problems are usually performance-related and can be diagnosed by a compression test. Or they consist of engine noises which can be traced to the top-end by means of a sounding rod or a stethoscope.

Low compression or uneven compression

1. Valve

- Incorrect adjustment
- Burned or bent valves
- Incorrect valve timing
- Broken valve spring

2. Cylinder head

- Leaking or damaged head gasket
- Warped or cracked cylinder head

3. Cylinder and piston (Refer to Section 7)

Too high compression

1. Excessive carbon build-up on piston head or combustion chamber

Excessive Noise

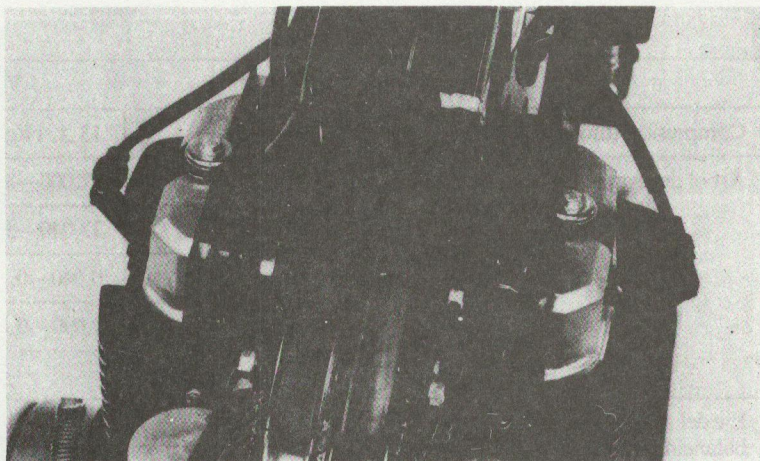
1. Incorrect adjustment
2. Sticking valve or broken valve spring
3. Damaged or worn rocker arm or camshaft
4. Loose or worn cam chain
5. Worn or damaged cam chain tensioner
6. Loose balancer chain
7. Worn cam sprocket teeth

• SPECIFICATIONS

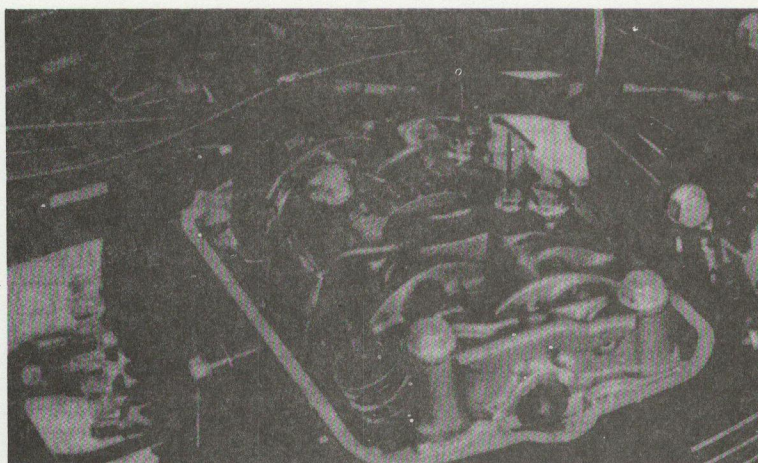
STANDARDS				SERVICE LIMIT
Compression (cold engine)			$13 \pm 1 \text{ kg/cm}^2$ ($185 \pm 14 \text{ psi}$)	—
Camshaft	Cam height	IN	37.008—37.208 mm (1.457—1.465 in)	36.9 mm (1.45 in)
		EX	37.040—37.240 mm (1.458—1.466 in)	36.9 mm (1.45 in)
	Oil clearance	Ends	0.040—0.141 mm (0.0016—0.0056 in)	0.20 mm (0.0079 in)
		Center	0.090—0.191 mm (0.0035—0.0075 in)	0.23 mm (0.0091 in)
	Runout		—	0.10 mm (0.004 in)
Rocker arm shaft	Arm I.D.		12.000—12.018 mm (0.4724—0.4731 in)	12.03 mm (0.474 in)
	Shaft O.D.		11.966—11.984 mm (0.4711—0.4718 in)	11.95 mm (0.470 in)
	Camshaft holder I.D.		12.000—12.027 mm (0.4724—0.4735 in)	12.05 mm (0.474 in)
Valve spring	Free length	IN-OUTER	50.6 mm (1.99 in)	49.0 mm (1.93 in)
		IN-INNER	36.6 mm (1.44 in)	35.5 mm (1.40 in)
		EX-OUTER	51.1 mm (2.01 in)	49.5 mm (1.95 in)
		EX-INNER	40.8 mm (1.61 in)	39.5 mm (1.56 in)
	Preload/length	IN-OUTER	33.0—37.0 kg/29.6 mm (72.8—81.6 lbs/1.17 in)	30 kg/29.6 mm (66.2 lbs/1.17 in)
		IN-INNER	19.0—22.0 kg/25.2 mm (41.9—46.3 lbs/0.99 in)	17 kg/25.2 mm (37.5 lbs/0.99 in)
		EX-OUTER	57.5-64.5 kg/31.8 mm (126.8—142.2 lbs/1.25 in)	52 kg/31.8 mm (112.5 lbs/1.25 in)
		EX-INNER	33.0—37.0 kg/29.6 mm (72.8—81.6 lbs/1.17 in)	30 kg/29.6 mm (66.2 lbs/1.17 in)
Valve guide	Valve stem O.D.	IN	5.455—5.470 mm (0.2148—0.2154 in)	5.44 mm (0.214 in)
		EX	6.555—6.570 mm (0.2580—0.2587 in)	6.54 mm (0.257 in)
	Valve guide I.D.	IN	5.500—5.510 mm (0.2165—0.2169 in)	5.60 mm (0.220 in)
		EX	6.600—6.615 mm (0.2598—0.2604 in)	6.70 mm (0.264 in)
	Stem-to-guide clearance	IN	—	0.10 mm (0.004 in)
		EX	—	0.10 mm (0.004 in)
	Valve seat width		1.1—1.3 mm (0.04—0.05 in)	2.0 mm (0.08 in)
Cylinder head	Warpage		—	0.10 mm (0.004 in)

ROCKER ARM/CAMSHAFT REMOVAL

Remove the fuel tank.
Remove the left crankcase cover and the cylinder head cover.



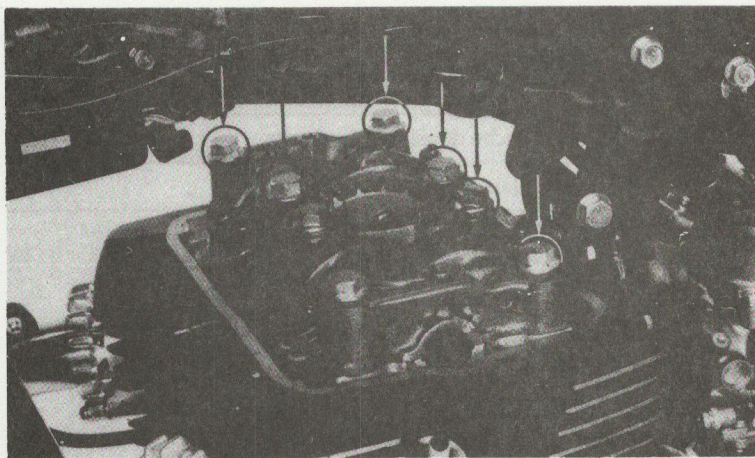
Remove the bolts and the oil pipe.



Loosen the cylinder head bolts.

CAUTION

- Perform this operation while the engine is cold to prevent warpage of the cylinder head.
- Loosen the cylinder head bolts in 2-3 steps in criss-cross pattern beginning by the edge bolts to the center ones.

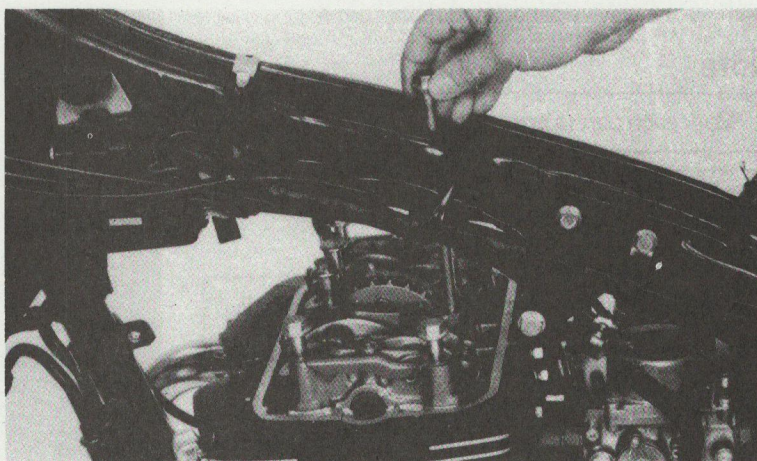


CYLINDER HEAD / VALVES

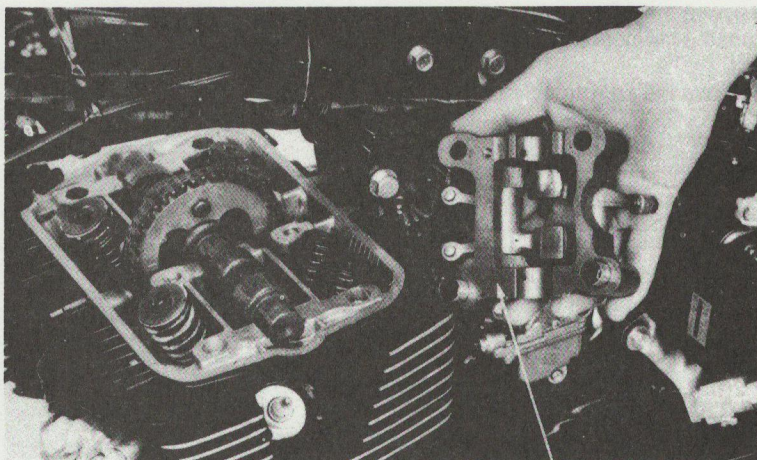
Remove the cylinder head bolts.

NOTE

Some of the bolts at the center of the head are exposed. When removing them, use care to keep dirt from entering the cylinder head.

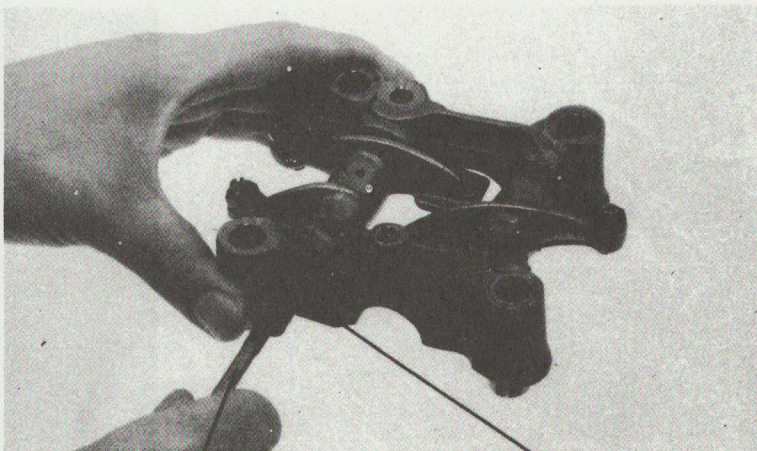


Remove the camshaft holders.



CAMSHAFT HOLDER

Insert an 8 mm bolt in the rocker arm shaft and pull out the shaft.



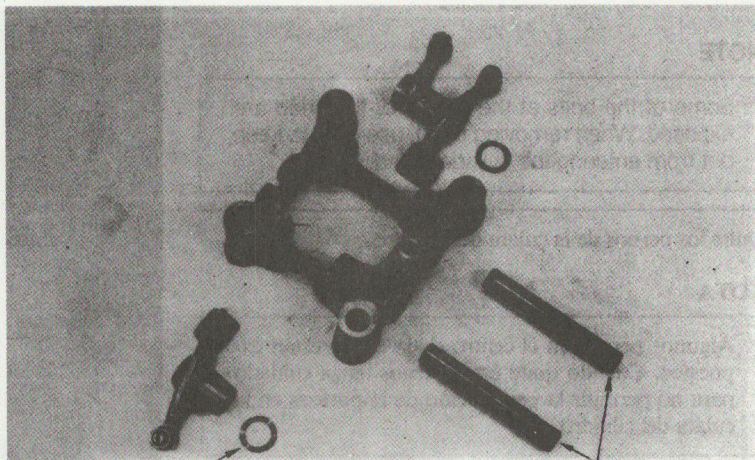
8 mm BOLT

ROCKER ARM SHAFTS

Remove the wave washers and rocker arms.

NOTE

Mark each part to ensure the original assembly.



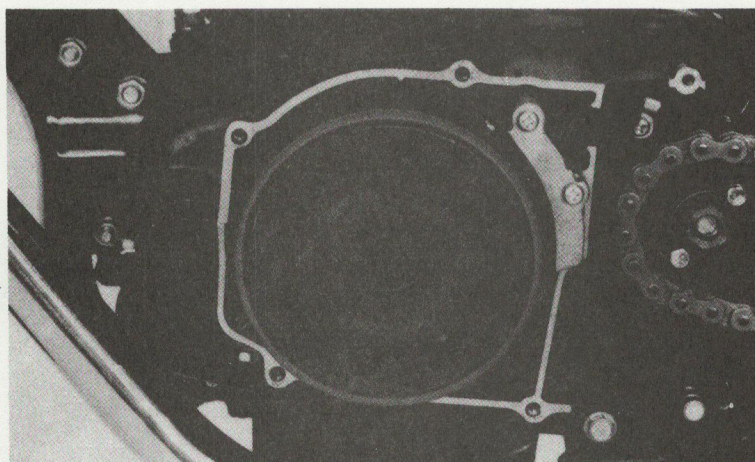
WAVE WASHER

ROCKER ARM SHAFTS

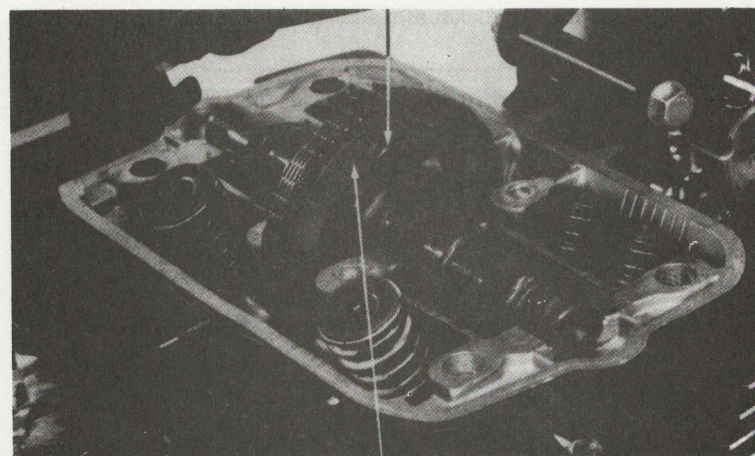
Remove the cam sprocket mount bolt.
Turn the flywheel slowly and remove the opposite mount bolt.
Remove the cam sprocket from the camshaft.

NOTE

Do not drop the mounting bolts into the cylinder.



BOLT

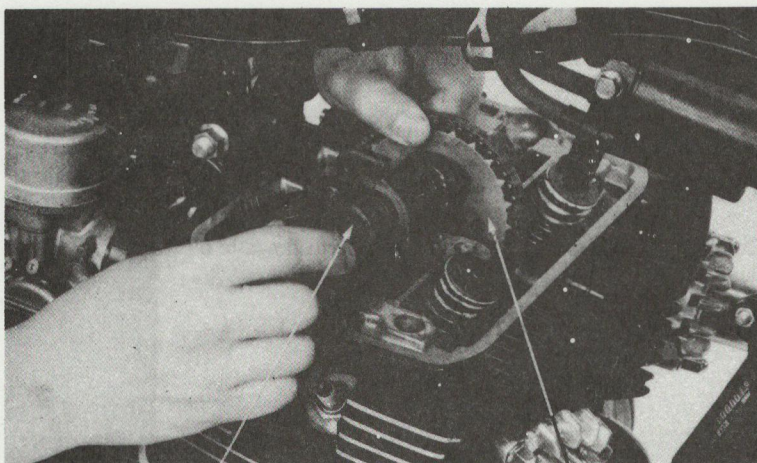


CAM SPROCKET

Remove the camshaft from the right side.
Remove the cam chain from the sprocket.

NOTE

Lift the cam chain with a piece of wire to keep it from falling in the cylinder.



CAMSHAFT

CAM SPROCKET

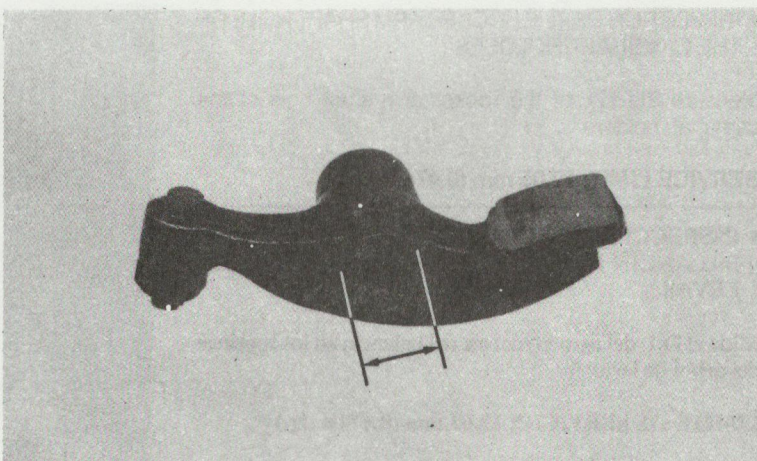
• ROCKER ARM INSPECTION

Inspect the rocker arms regarding damage, wear or clogged oil holes. Measure the I.D. of each rocker arm.

SERVICE LIMIT: 12.03 mm (0.474 in)

NOTE

If any rocker arms require servicing or replacement, inspect the camshaft lobes regarding scoring, chipping, or flat spots.



- **ROCKER ARM SHAFT INSPECTION**

Inspect the rocker arm shafts regarding wear or damage.
Measure the O.D.

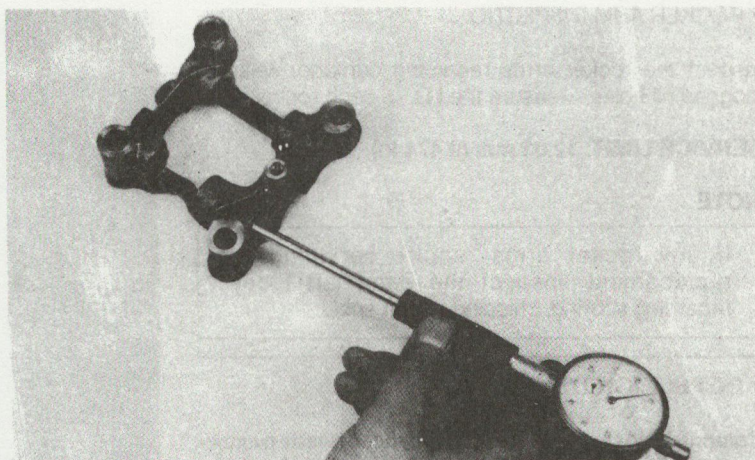
SERVICE LIMIT: 11.95 mm (0.470 in)



- **INSPECTION OF THE ROCKER ARM SHAFT HOLE OF THE CAMSHAFT HOLDERS**

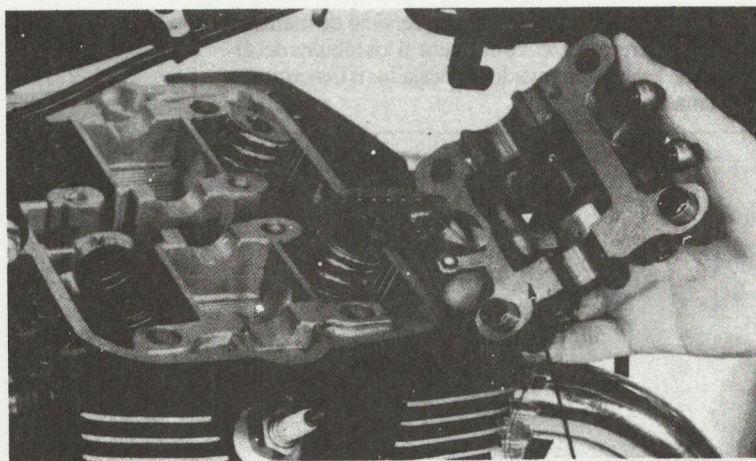
Measure the I.D. of the rocker arm shaft hole of the camshaft holders.

SERVICE LIMIT: 12.05 mm (0.474 in)



- **CAM BEARING SURFACE INSPECTION**

Inspect the cam bearing surfaces regarding scoring, scratches, or evidence of insufficient lubrication.



CAMSHAFT HOLDER

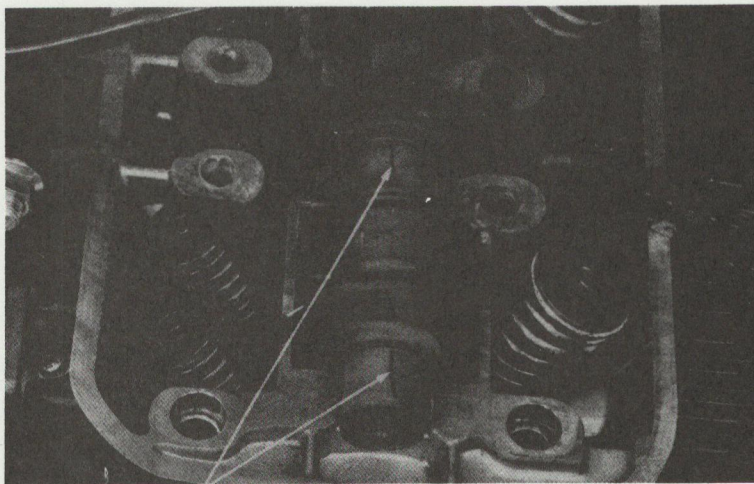
CYLINDER HEAD / VALVES

• CAMSHAFT OIL CLEARANCE

Lay a strip of Plastigage lengthwise on the top of each camshaft journal.

NOTE

Wipe any oil from the journals before using Plastigage.



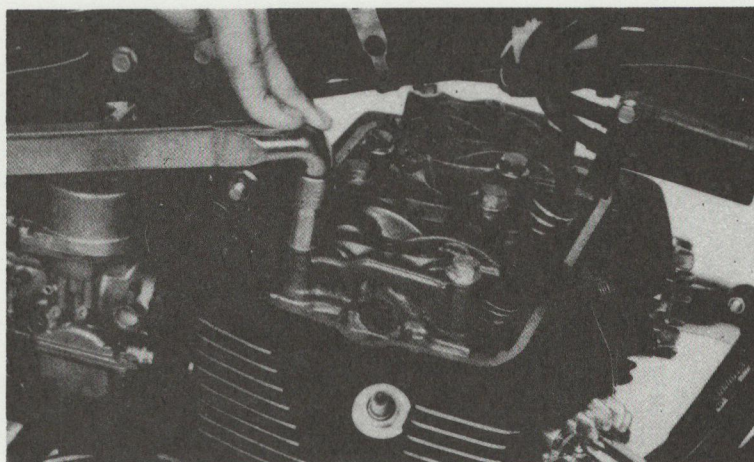
PLASTIGAGE

Loosen all the valve adjusters, then install the camshaft holders and tighten the bolts according to the specified torque in 2—3 steps in criss-cross pattern.

TORQUE: 30—33 N.m (3.0—3.3 kg.m, 22—24 ft.lb)

NOTE

Do not rotate the camshaft when using Plastigage.



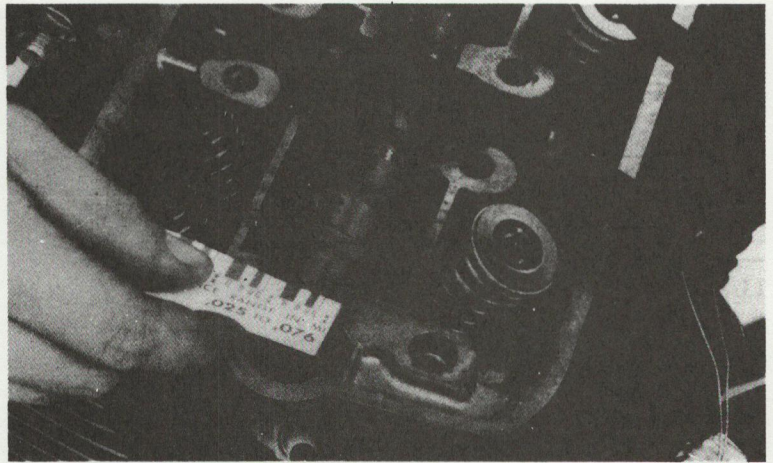
Remove the camshaft holders and measure the width of each Plastigage. The largest width determines the oil clearance.

SERVICE LIMIT:

ENDS: 0.20 mm (0.008 in)

CENTER: 0.23 mm (0.009 in)

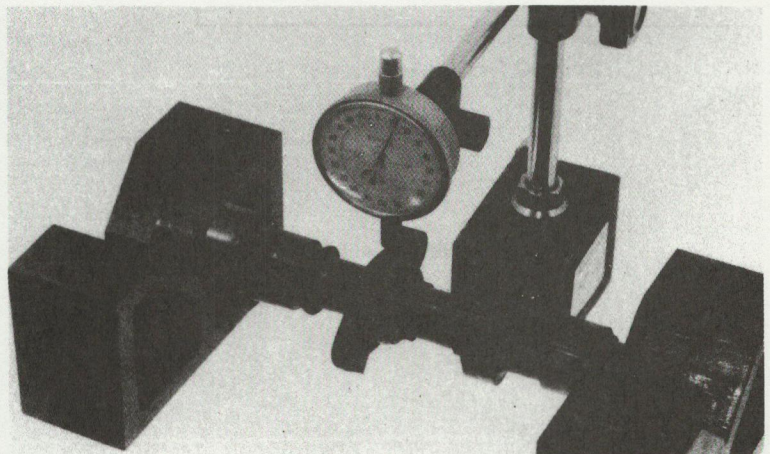
When the service limits are exceeded, replace the camshaft and recheck the oil clearance. Replace the cylinder head and camshaft holders if the clearance still exceeds service limits.



• CAMSHAFT RUNOUT

Check the camshaft runout by means of a dial gauge. Support both ends of the camshaft with V-blocks.

SERVICE LIMIT: 0.10 mm (0.004 in)



CYLINDER HEAD / VALVES

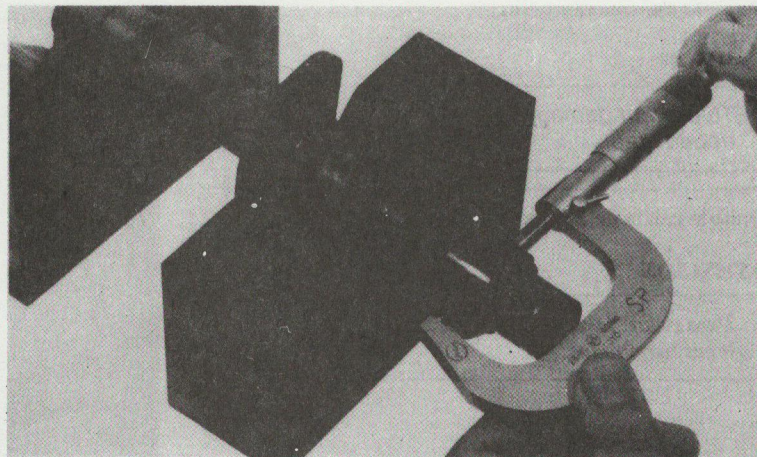
• CAM LOBE INSPECTION

Using a micrometer check each cam lobe regarding wear or damage.

SERVICE LIMIT:

IN. 36.9 mm (1.45 in)

EX. 36.9 mm (1.45 in)



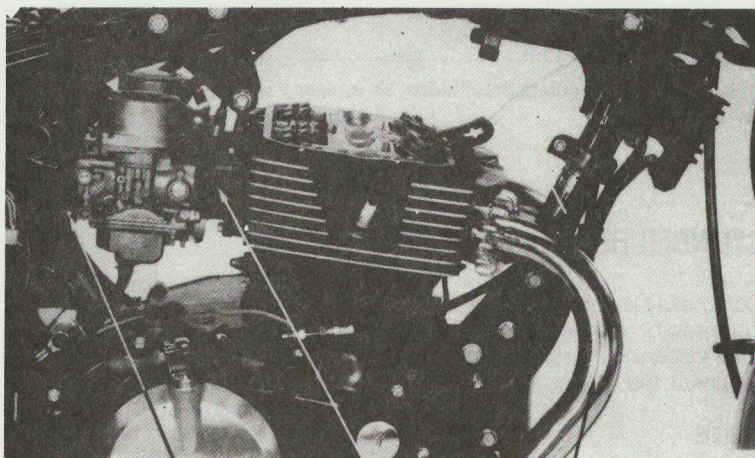
CYLINDER HEAD REMOVAL

Remove the carburetor band screws and insulator band screws.

Remove the carburetors and the insulators.

Remove the cam chain tensioner bolt.

Remove the exhaust pipes.



BAND SCREW

INSULATOR

EXHAUST PIPE

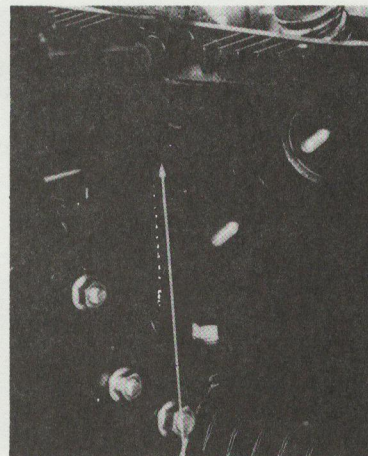
Remove the engine upper hanger bolt.

Remove the upper hanger brackets.

Remove the oil pipe bolt and the oil pipe.



BRACKETS

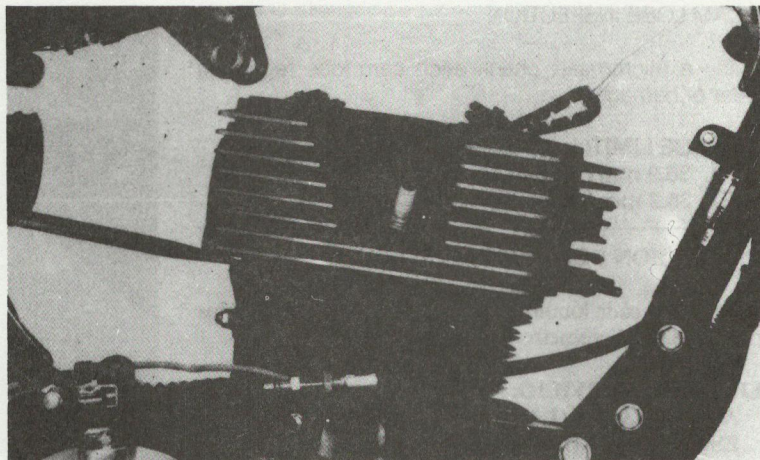


OIL PIPE

Remove the cylinder head.

CAUTION

To prevent damage to the fins, pry only at the ribbed areas.



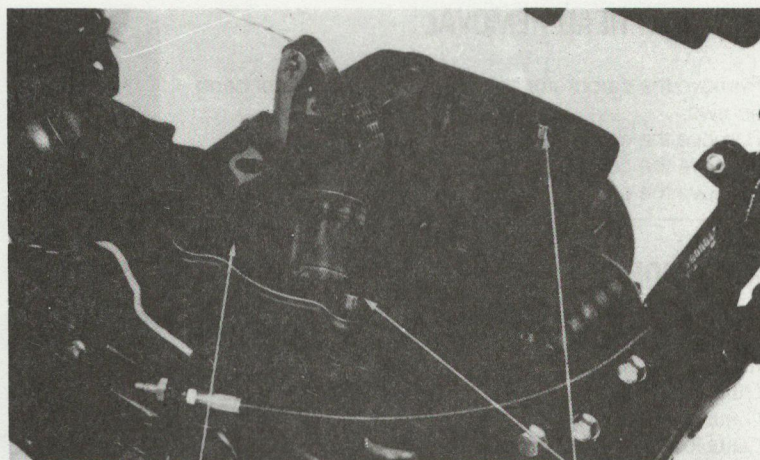
Remove the cylinder head gasket, the dowel pins and the O-rings.

CYLINDER HEAD DISASSEMBLY

Compress the valve spring by means of the valve spring compressor and remove the valve cotters. After loosening the spring compressor remove the spring retainers, the springs and valves.

NOTE

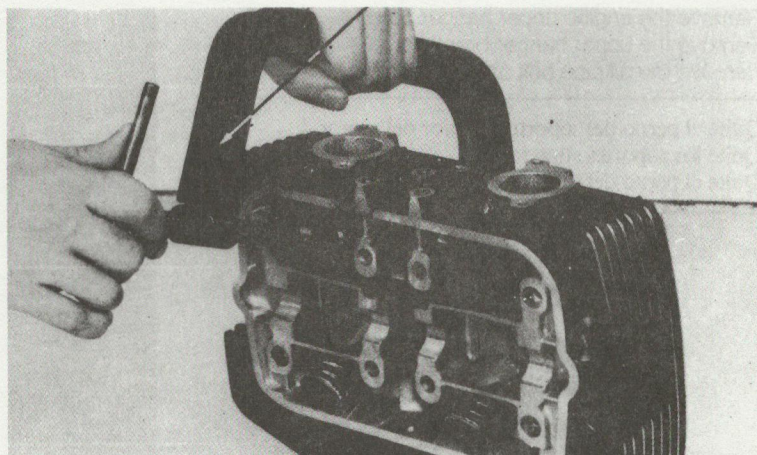
- Do not compress the valve springs more than necessary to remove the valve spring cotters.
- Mark all disassembled parts to ensure the original assembly.



GASKET

DOWEL PINS

VALVE SPRING COMPRESSOR

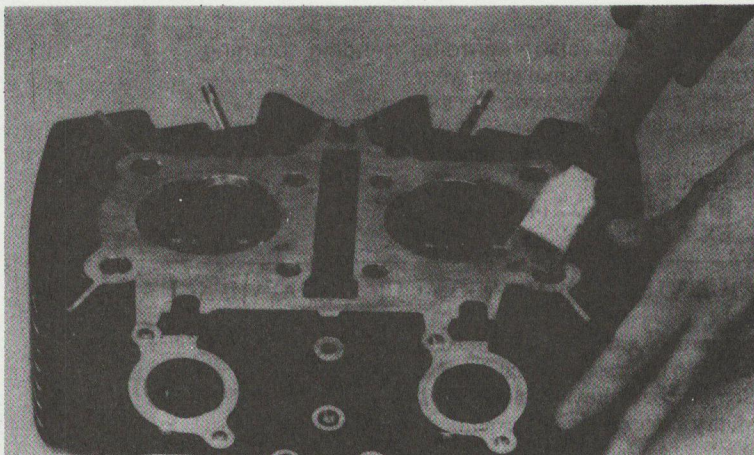


CYLINDER HEAD / VALVES

Remove carbon deposits from the combustion chamber.
Clean off the head gasket surfaces.

NOTE

- Avoid damaging the gasket surfaces.
- Gasket will come off easier if soaked in solvent.

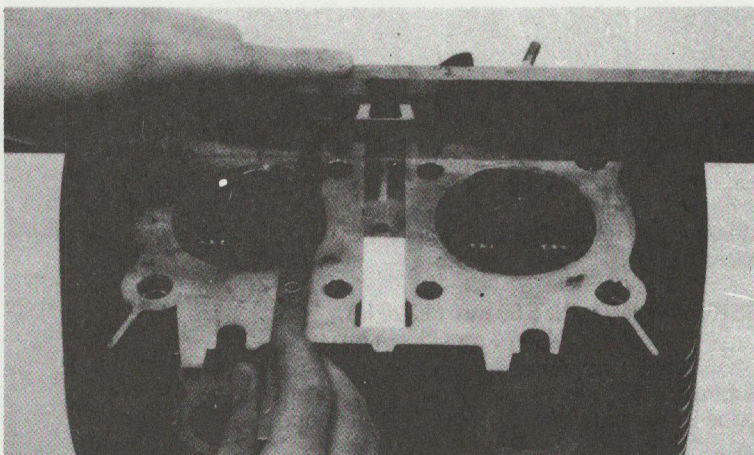


• CYLINDER HEAD INSPECTION

Check the spark plug hole and the valve areas regarding cracks.

Check the cylinder head regarding warpage by means of a straight edge and a feeler gauge.

SERVICE LIMIT: 0.10 mm (0.004 in)



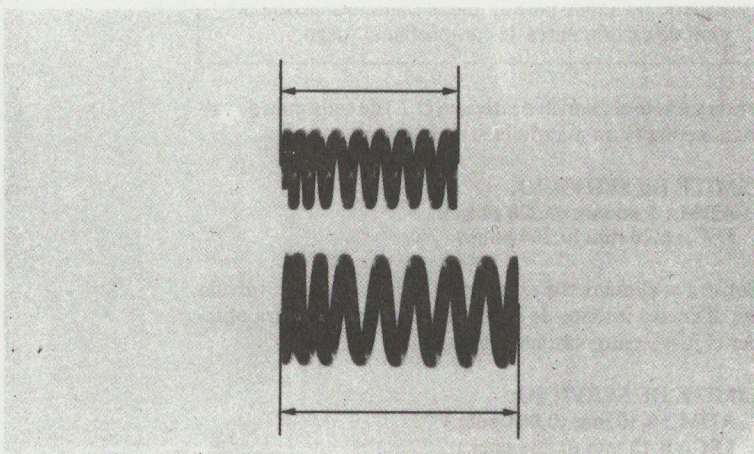
• VALVE SPRING FREE LENGTH INSPECTION

Measure the free length of the inner and the outer valve springs.

SERVICE LIMITS:

INNER: IN. 35.5 mm (1.40 in)
EX. 39.5 mm (1.56 in)

OUTER: IN. 49.0 mm (1.93 in)
EX. 49.5 mm (1.95 in)



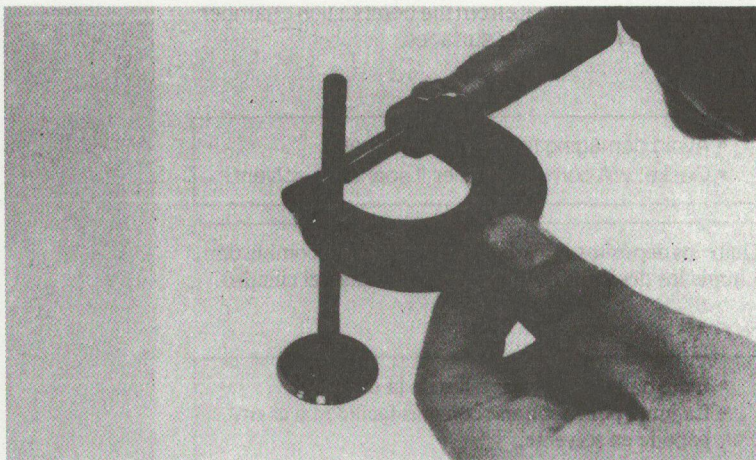
• VALVE STEM-TO-GUIDE CLEARANCE

Inspect each valve regarding bending, burning, scratches or abnormal stem wear.
Check the valve movement in the guide.
Measure and record each valve stem O.D.

SERVICE LIMIT:

IN. 5.44 mm (0.214 in)

EX. 6.54 mm (0.257 in)



NOTE

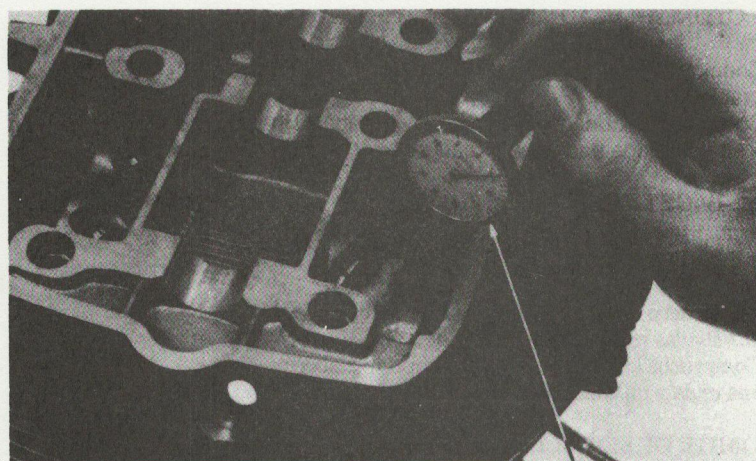
Ream the guides to remove any carbon build-up before checking the clearance.

Measure and record each valve guide I.D. using an inside micrometer.

SERVICE LIMIT: IN. 5.60 mm (0.220 in)
EX. 6.70 mm (0.264 in)

Subtract each valve stem O.D. from the corresponding guide I.D. to obtain the stem to guide clearance.

SERVICE LIMIT: IN. 0.10 mm (0.004 in)
EX. 0.10 mm (0.004 in)



INSIDE MICROMETER

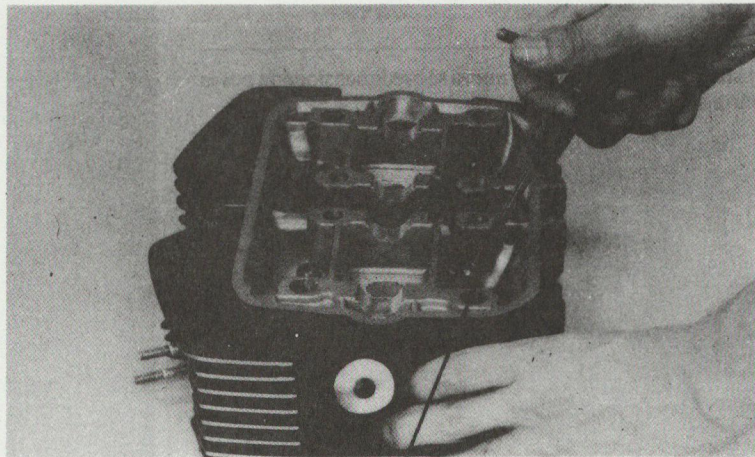
NOTE

If the stem-to-guide clearance exceeds the service limits, determine if a new guide with standard dimensions would bring the clearance within tolerance. If so, replace any guides as necessary and ream to fit.

If stem-to-guide clearance still exceeds the service limits with new guides, replace the valves and guides.

NOTE

Reface the valve seats whenever the valve guides are replaced.



VALVE GUIDE REAMER

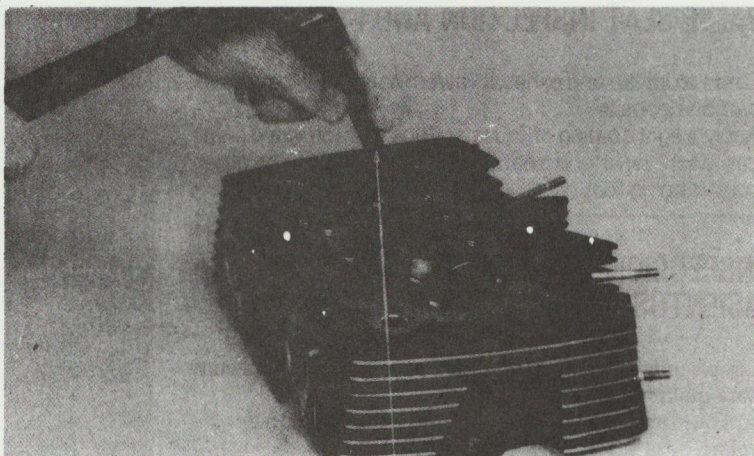
IN: 07984-2000000
EX: 07984-6110000

VALVE GUIDE REPLACEMENT

Support the cylinder head and drive out the guide from the valve port.

NOTE

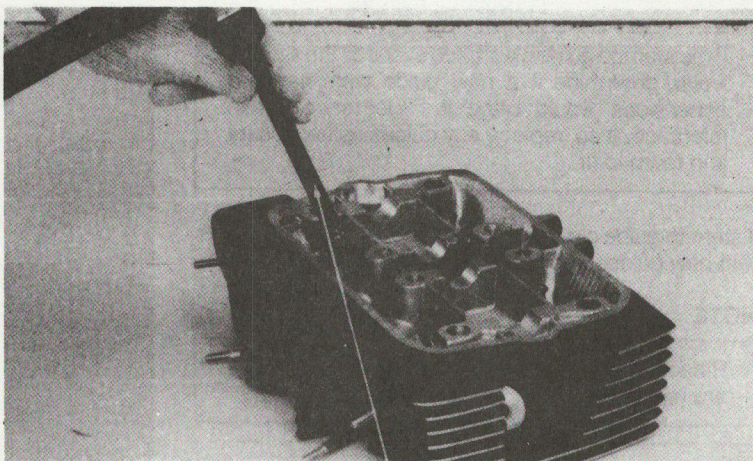
Use care in driving out the valve guide to avoid damaging the head.



VALVE GUIDE REMOVER

CYLINDER HEAD / VALVES

Install a new oversize valve guide from the top of the head.



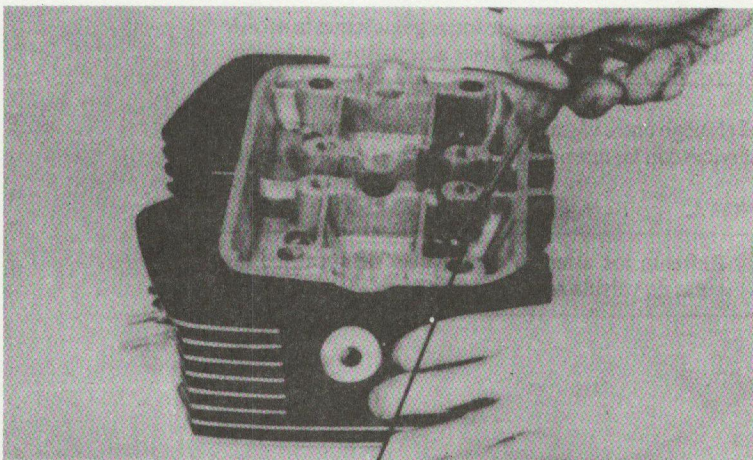
VALVE GUIDE DRIVER

Ream the new valve guide after installation.

NOTE

Use cutting oil on the reamer during this operation.

Clean the cylinder head thoroughly to remove any metal particles.

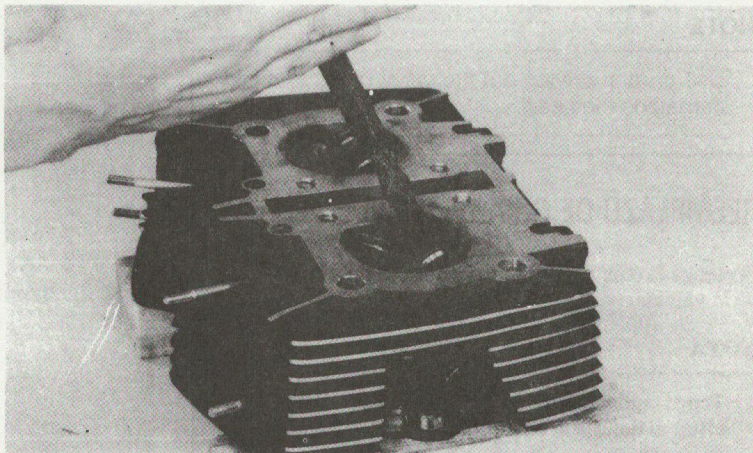


VALVE GUIDE REAMER

IN: 07984-2000000
EX: 07984-6110000

VALVE SEAT INSPECTION AND GRINDING

Clean all intake and exhaust valves thoroughly to remove carbon deposits.
Apply a light coating of Prussian Blue to each valve seat.
Lap each valve and seat using a rubber hose or other hand-lapping tool.



Remove the valve and inspect the face.

NOTE

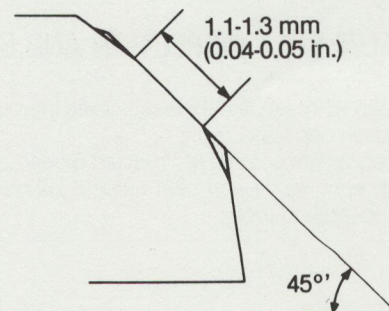
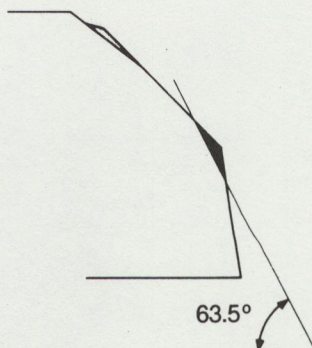
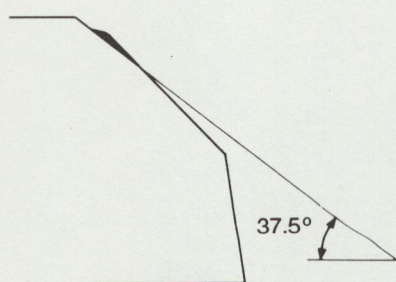
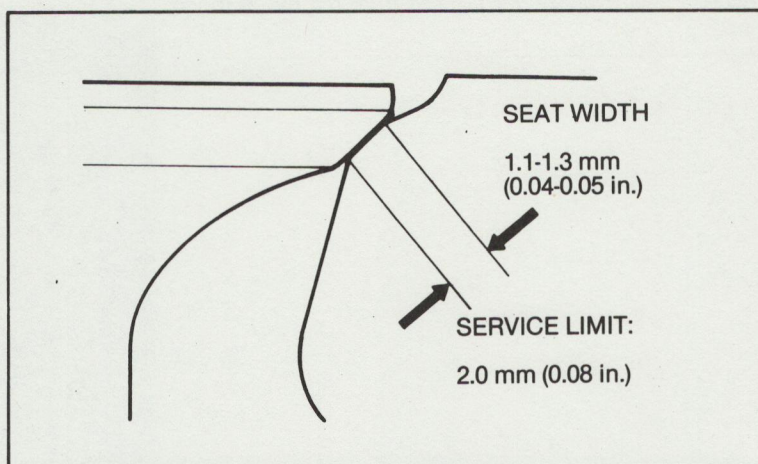
The valves cannot be ground. If the valve face is rough, worn unevenly, or contacts the seat improperly, the valve must be replaced.

Inspect the valve seats.

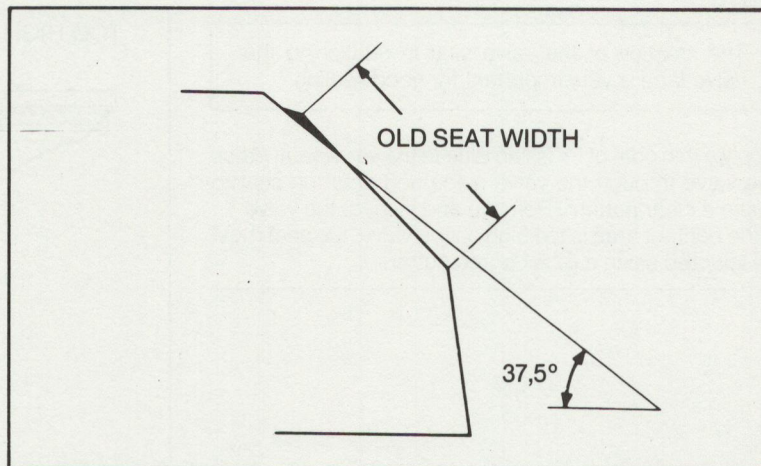
If the seat is too wide, too narrow, or has low spots, the seat must be ground (a power grinder is recommended for good valve sealing).

NOTE

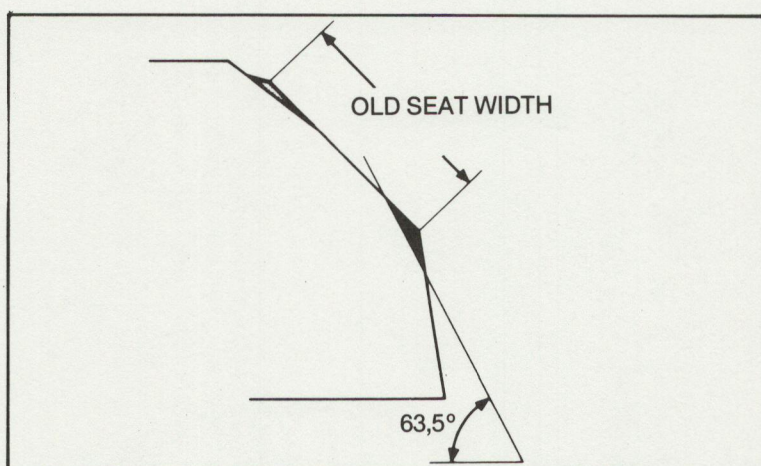
Follow the refacer manufacturer operating instructions.



Use a 37.5 degree cutter to remove 1/4 of the existing valve seat material.



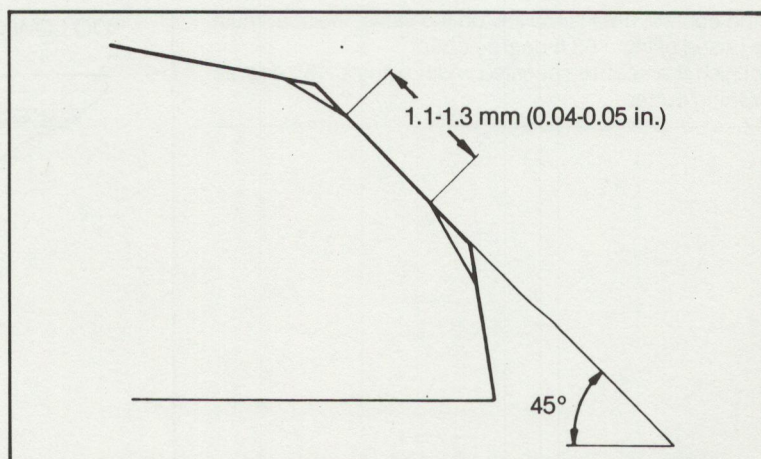
Use a 63.5 degree cutter to remove 1/4 of the old seat bottom.



Install a 45 degree finishing cutter and cut the seat to the proper width.

NOTE

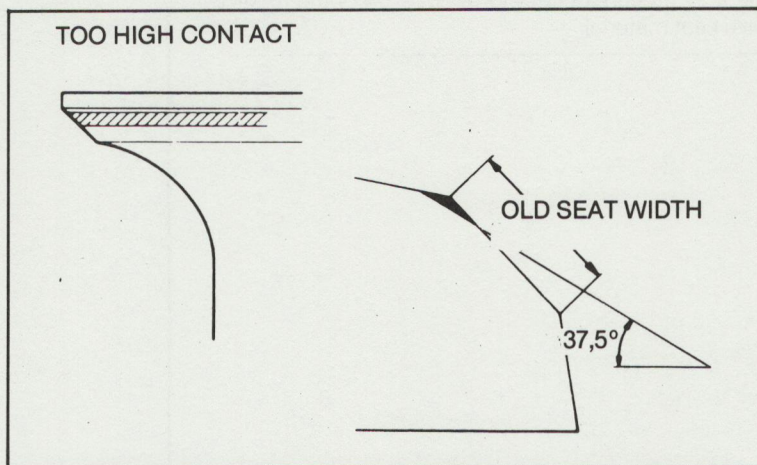
Make sure that all pitting and irregularities are removed. Refinish if necessary.



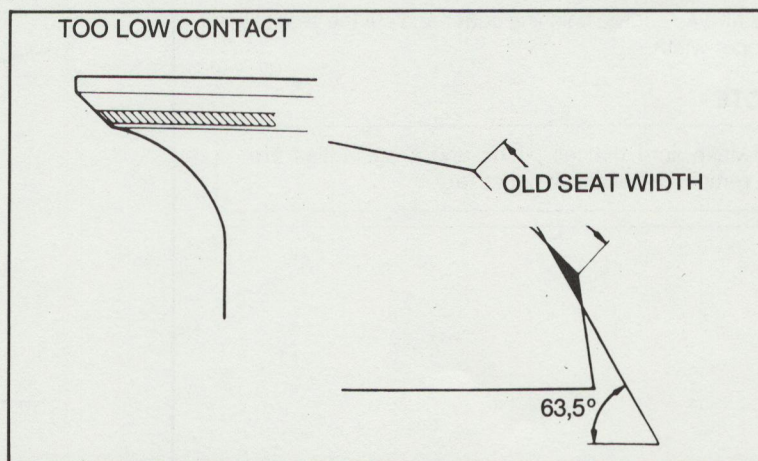
NOTE

The location of the valve seat in relation to the valve face is very important for good sealing.

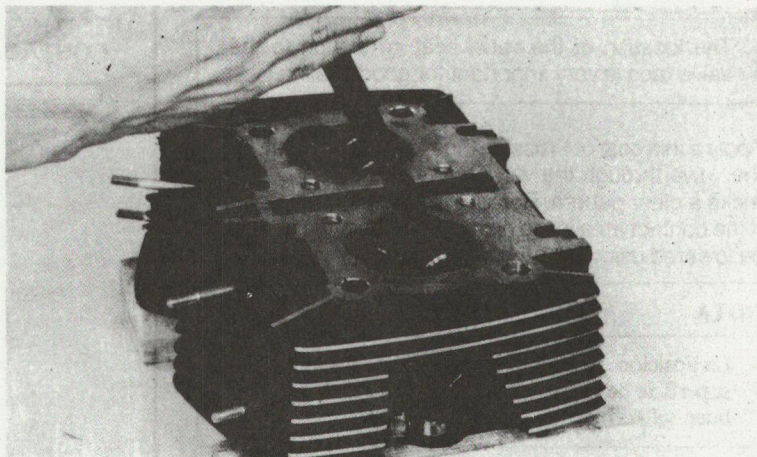
Apply a thin coat of Prussian Blue to the valve seat. Press the valve through the valve guide and onto the seat to make a clear pattern. Remove and inspect the valve. If the contact area is too high on the valve, the seat must be lowered using a 37.5 degree cutter.



If the contact area is too low on the valve, the seat must be raised using a 63.5 degree cutter. Refinish the seat to specified width using a 45° degree finishing cutter.



After cutting the seat, apply lapping compound to valve face and lap the valve exerting light pressure.
After lapping, wash any residual compound off the cylinder head and valve.



STEM SEAL

VALVE

CYLINDER HEAD ASSEMBLY

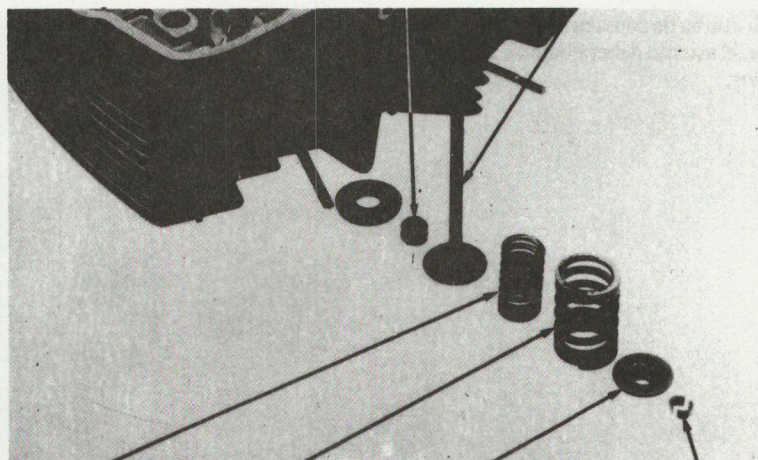
NOTE

Replace the valve stem seals when reassembling.

Lubricate each valve stem by means of oil and insert the valve in the valve guide.
Install the valve springs and retainers.

NOTE

Install the valve springs with the tightly wound coils facing the cylinder head.



INNER
SPRING

OUTER
SPRING

RETAINER

COTTERS

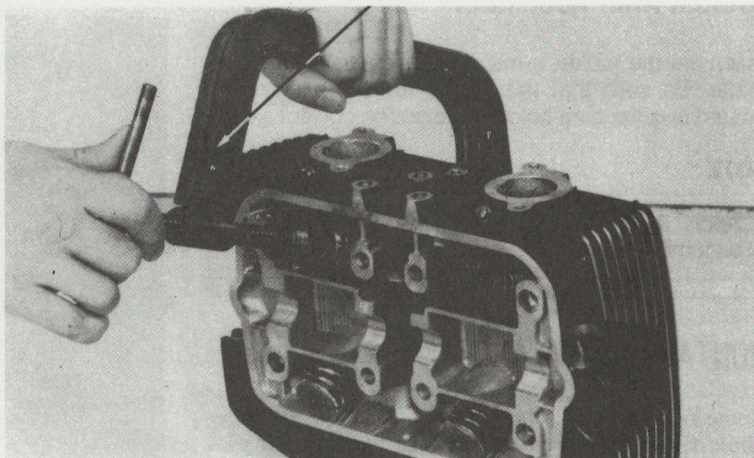
CYLINDER HEAD / VALVES

VALVE SPRING COMPRESSOR

Compress the valve springs by means of the valve spring compressor.
Install the valve cotters.

CAUTION

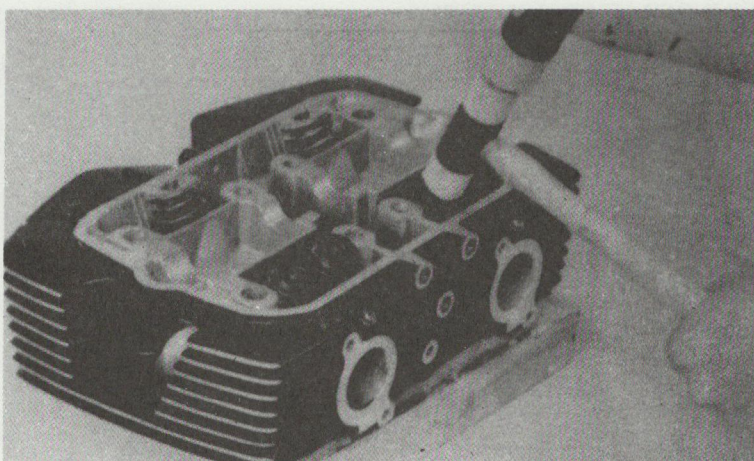
To prevent loss of tension do not compress the valve spring more than necessary to install the valve cotters.



Tap the valve stems gently by means of a plastic hammer to seat the cotters firmly.

NOTE

Support the cylinder head above the work bench surface to prevent possible valve damage.



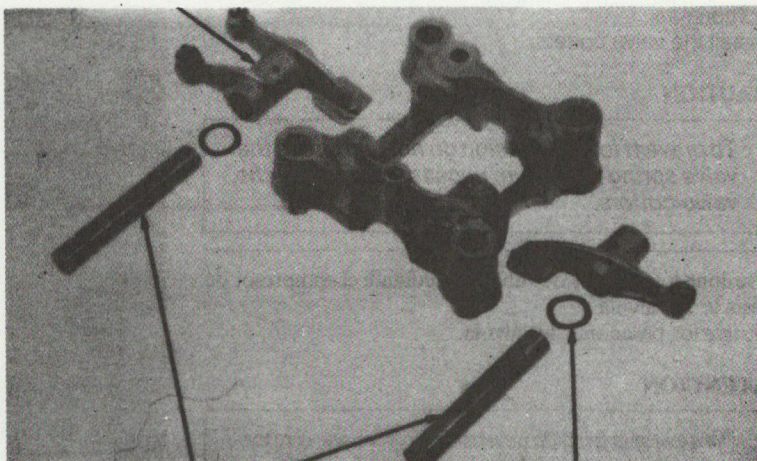
ROCKER ARM ASSEMBLY

Assemble the rocker arms, the wave washer and the shafts. Be sure that the rocker arms are correctly located and the cam holders are on the correct sides.

NOTE

Apply a thin coat of oil to the shafts before assembling.

ROCKER ARM



ROCKER ARM SHAFTS

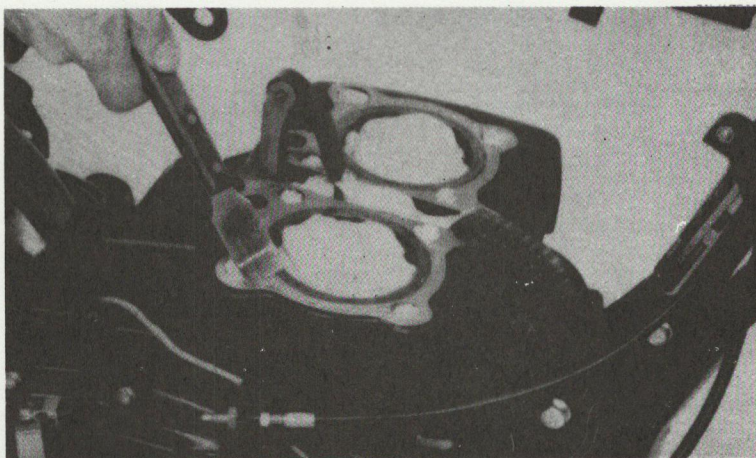
WAVE WASHER

CYLINDER HEAD INSTALLATION

Clean off any gasket material from the cylinder head gasket surfaces.

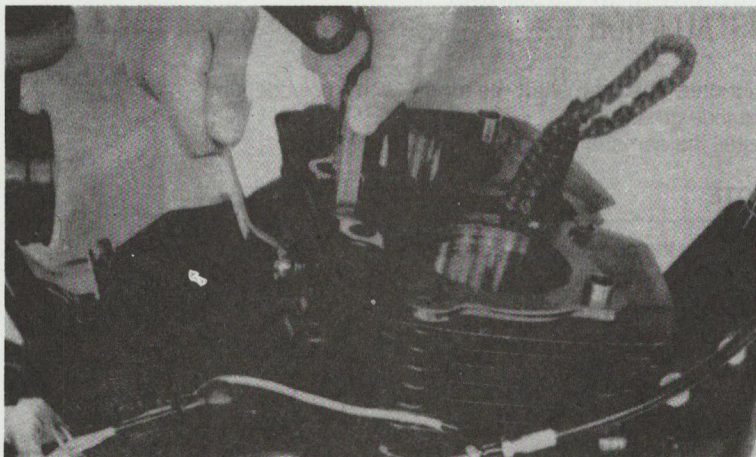
NOTE

Do not allow dust and dirt enter the cylinder.

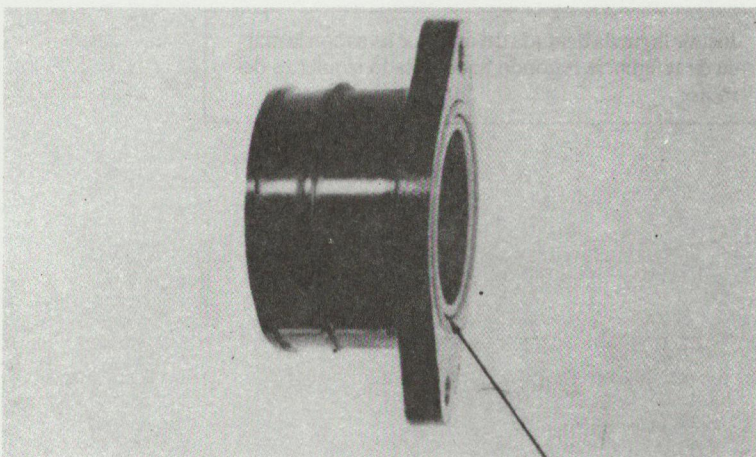


CYLINDER HEAD / VALVES

Install the O-rings, the dowel pins and a new gasket. Loosen the cam chain tensioner lock nut and pull the tensioner up fully. Retighten the lock nut.

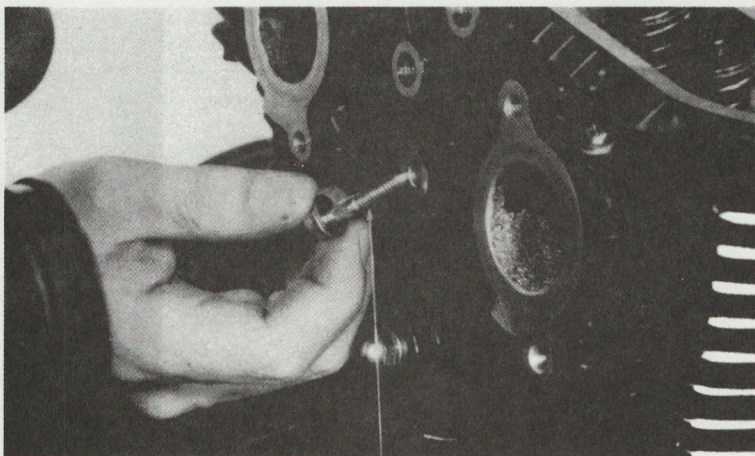


Install the cylinder head.
Install the carburetor insulator with the narrow end down.



O-RING

Install the cam chain tensioner bolt and the sealing washer.



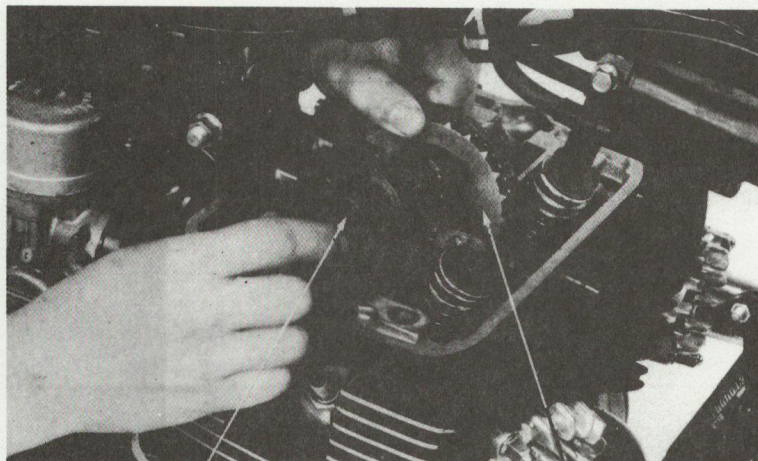
CAM CHAIN TENSIONER BOLT

CAMSHAFT AND ROCKER ARM INSTALLATION

Lubricate the camshaft bearings with molybdenum disulfide grease.
Install the camshaft and the camshaft sprocket.

NOTE

Install the camshaft sprocket with the timing mark facing the left side of the engine.

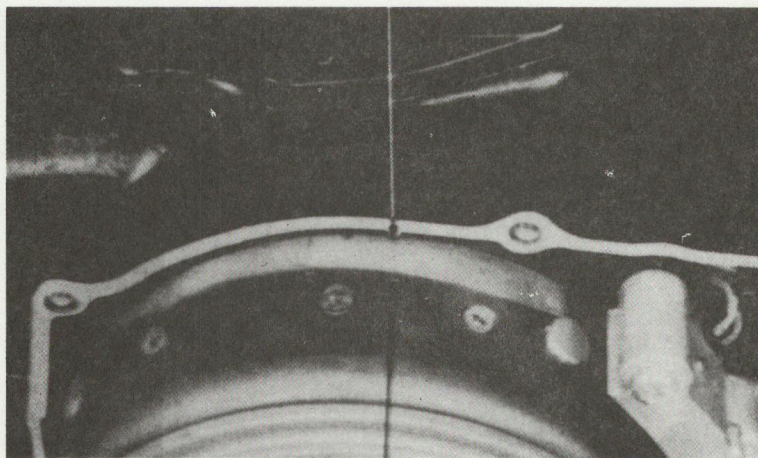


CAMSHAFT

CAM SPROCKET

INDEX MARK

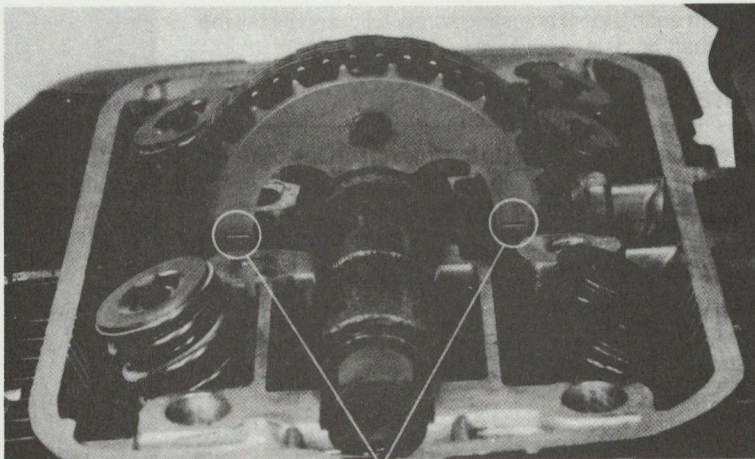
Align the "T" mark on the A.C. generator rotor with the index mark.



"T" MARK

CYLINDER HEAD / VALVES

Align the timing marks on the sprocket with the head cover mating surface.
Place the timing chain on the sprocket while holding the sprocket.



TIMINGS MARKS

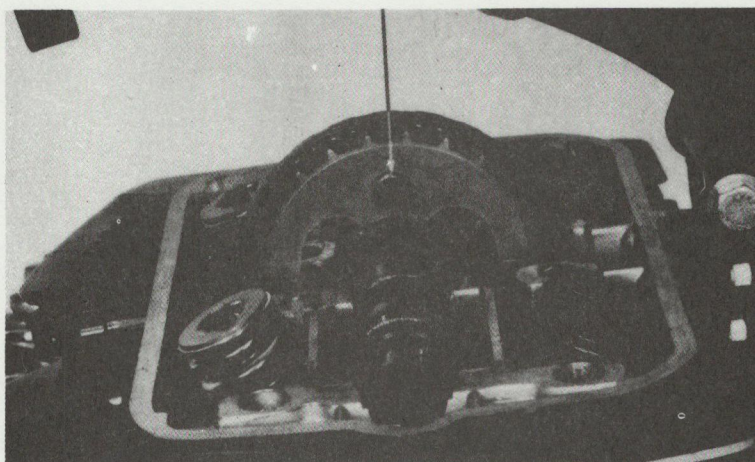
BOLT

Install and tighten the sprocket mount bolt and turn the generator rotor slowly.
Install and tighten the opposite bolt.

TORQUE: 18—22 N.m (1.8—2.2 kg.m, 13—16 ft.lb)

NOTE

Do not allow the bolts to fall into the crankcase.



HONDA®

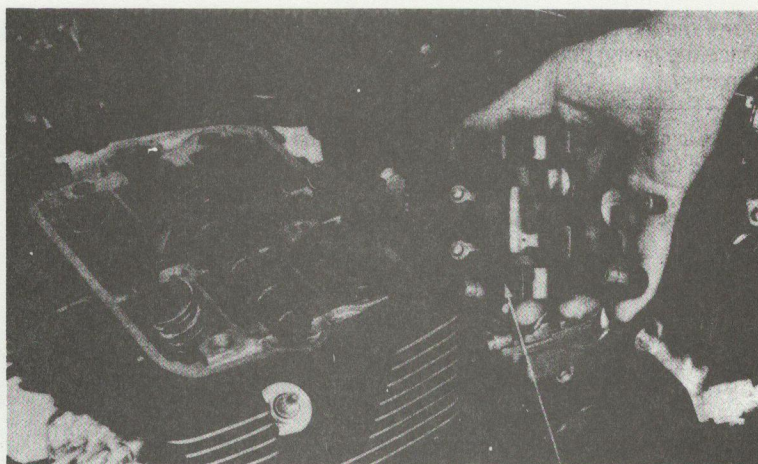
CB450N

CYLINDER HEAD / VALVES

Make sure that the dowel pins are in place. Loosen each tappet adjusting screw fully, and install the camshaft holders.

NOTE

- Apply a liquid sealant to the mating surface of the camshaft holder.
- Lubricate the cam journals on the camshaft holder with molybdenum disulfide grease.



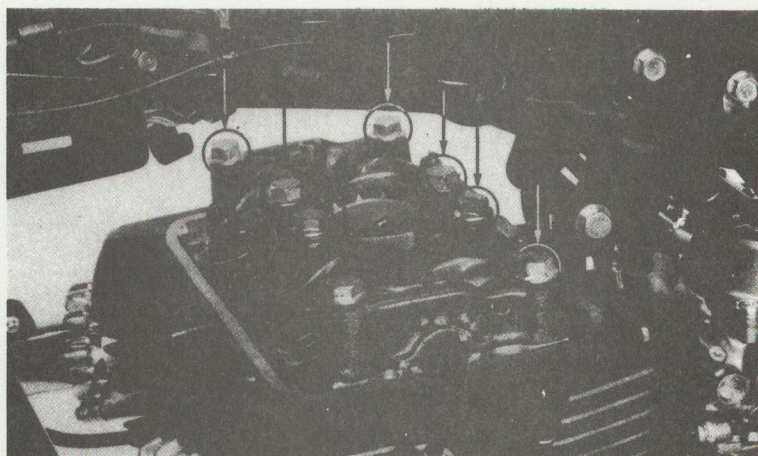
CAMSHAFT HOLDER

Install and tighten the cylinder head bolts according to specified torque.

TORQUE: 30—33 N.m (3.0—3.3 kg.m, 22-24 ft.lb)

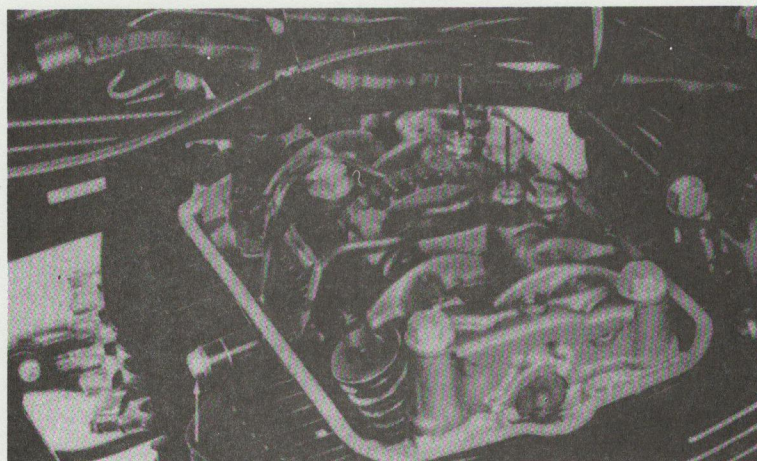
NOTE

Tighten the bolts in 2—3 steps in criss-cross pattern beginning by the center bolts towards the edge ones.

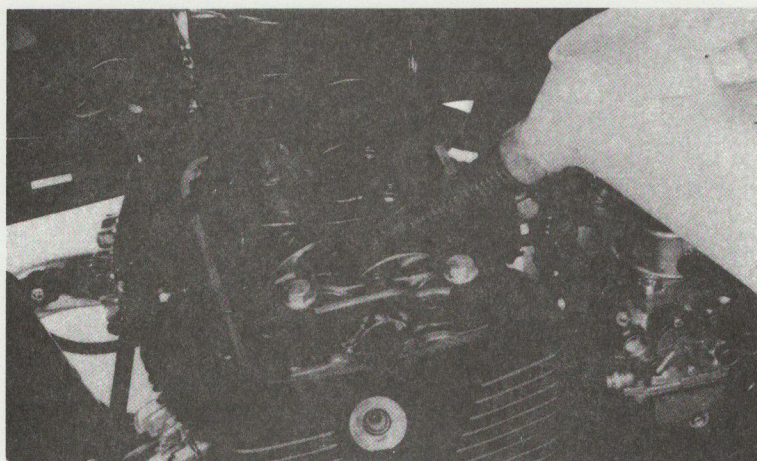


CYLINDER HEAD / VALVES

Install the oil pipe by tightening the oil bolts.



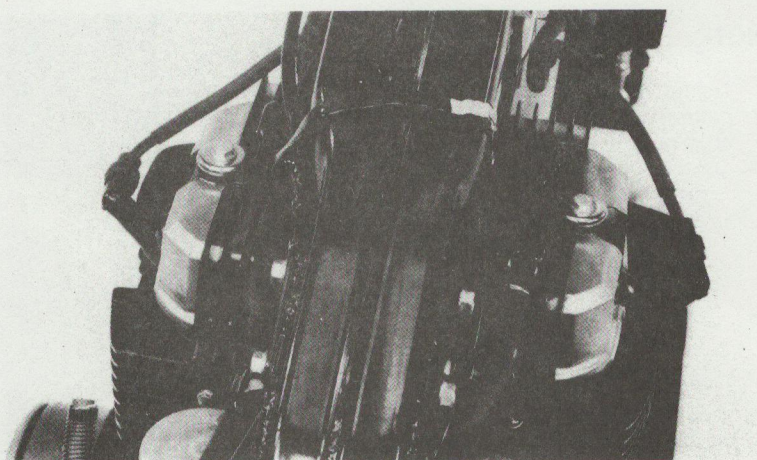
Fill the oil pockets in the head with oil in such a way that the cam lobes are submerged.

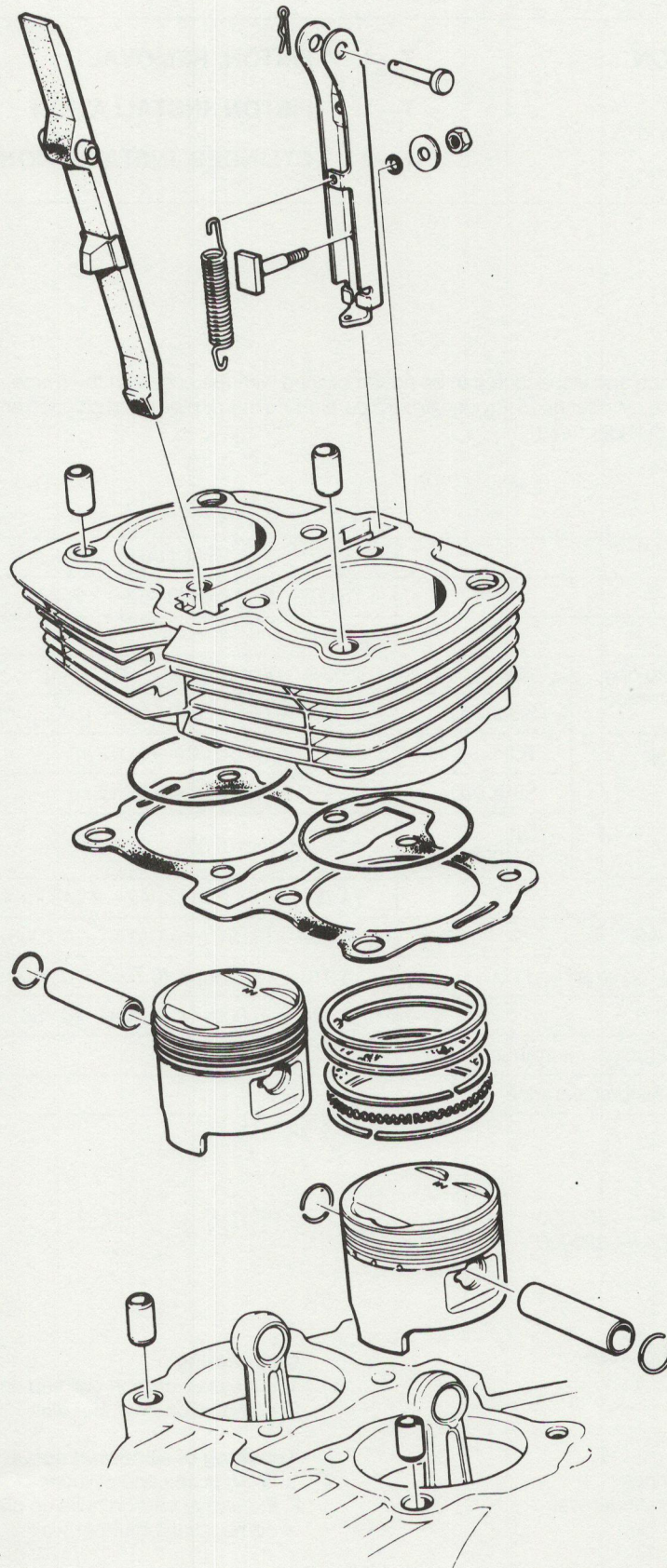


Adjust the cam chain tension (Section 3)
Adjust the valve tappet clearance (Section 3)
Inspect the cylinder head cover gasket regarding damage or deterioration. Install the cover. Tighten the bolts.

TORQUE: 8—12 N.m (0.8—1.2 kg.m, 6—9 ft.lb)

Install the right and left exhaust pipes and the upper hanger bracket bolt.
Connect the carburetor insulators to the carburetors.





7. CYLINDERS/PISTONS

HONDA®
CB450N

SERVICE INFORMATION	7-1	PISTON REMOVAL	7-4
TROUBLESHOOTING	7-1	PISTON INSTALLATION	7-8
CYLINDER REMOVAL	7-2	CYLINDER INSTALLATION	7-8

SERVICE INFORMATION

• WORKING PRACTICE

All cylinder and piston maintenance and inspection can be accomplished with the engine in the frame. Camshaft lubricating oil is fed to the cylinder head through an oil pipe. Be sure this oil pipe is not clogged and that the O-rings and dowel pins are in place before installing the cylinder head.

• SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		75.00—75.01 mm (2.952—2.953 in)	75.10 mm (2.957 in)
	Warpage		—	0.10 mm (0.004 in)
Piston, piston rings and piston pin	Piston ring-to-ring groove clearance	TOP	0.03—0.06 mm (0.001—0.002 in)	0.10 mm (0.004 in)
		SECOND	0.025—0.055 mm (0.0009—0.0022 in)	0.10 mm (0.004 in)
	Ring end gap	TOP	0.1—0.3 mm (0.004—0.012 in)	0.50 mm (0.020 in)
		SECOND	0.1—0.3 mm (0.004—0.012 in)	0.50 mm (0.020 in)
		OIL (SIDE RAIL)	0.2—0.9 mm (0.008—0.035 in)	1.10 mm (0.043 in)
	Piston O.D.		74.73—74.74 mm (2.942—2.943 in)	74.65 mm (2.940 in)
	Piston pin bore		18.002—18.008 mm (0.7087—0.7088 in)	18.04 mm (0.710 in)
	Connecting rod small end I.D.		18.016—18.034 mm (0.7093—0.7100 in)	18.06 mm (0.717 in)
	Piston pin O.D.		17.994—18.000 mm (0.7084—0.7087 in)	17.98 mm (0.707 in)
	Piston-to-piston pin clearance		—	0.04 mm (0.0016 in)
	Cylinder-to-piston clearance		—	0.10 mm (0.004 in)

• SPECIAL TOOLS

Piston Base	07958—2500000
Piston Ring Compressor	07954—2830000

TROUBLESHOOTING

Too low or unstable compression

1. Worn cylinder or piston rings

Excessive smoke

1. Worn cylinder or piston
2. Improper installation of piston rings
3. Scored or scratched piston or cylinder wall

Overheating

1. Excessive carbon build-up on the piston or on the combustion chamber wall.

Knocking or abnormal noise

1. Worn piston and cylinder
2. Excessive carbon build-up on the piston or on the combustion chamber wall

CYLINDER REMOVAL

Remove the cylinder head. (Refer to Section 6)
Remove the cam chain guide.



CAM CHAIN GUIDE

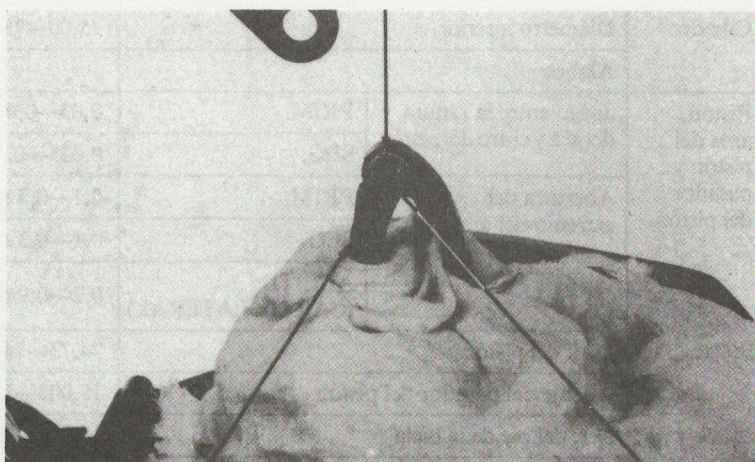
CLIP

Remove the cam chain tensioner clip and pin.

NOTE

Do not drop the clip and pin into the crankcase.

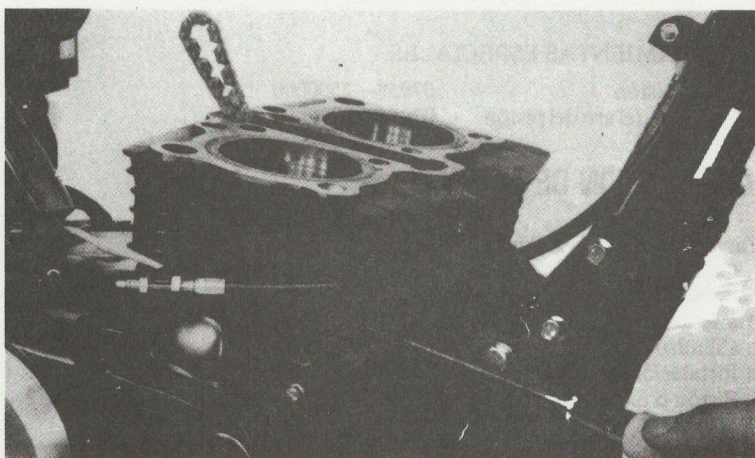
Remove the tensioner lock nut and the sealing washer.
Remove the tensioner base.



TENSIONER BASE

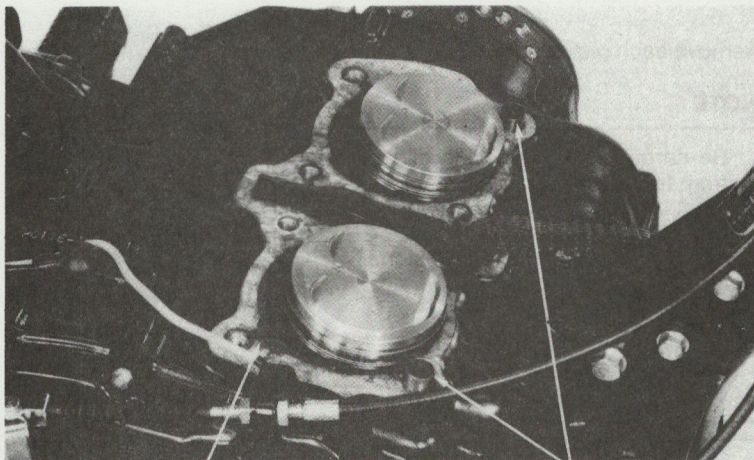
PIN

Remove the cylinder.



CYLINDERS/PISTONS

Remove the cylinder gasket and the dowel pins.



GASKET

DOWEL PINS

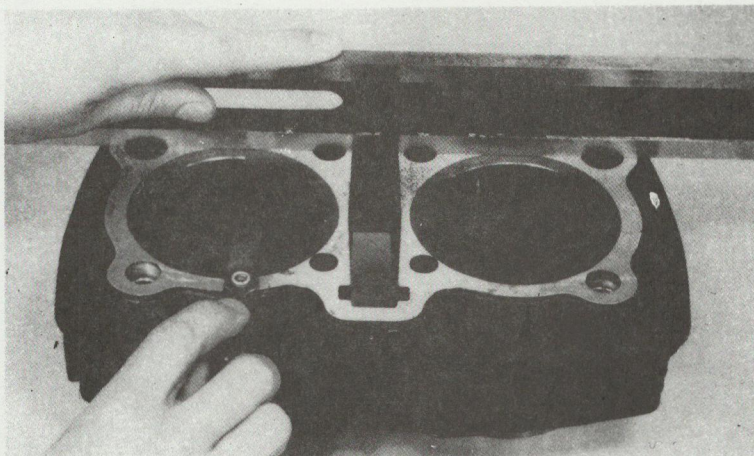
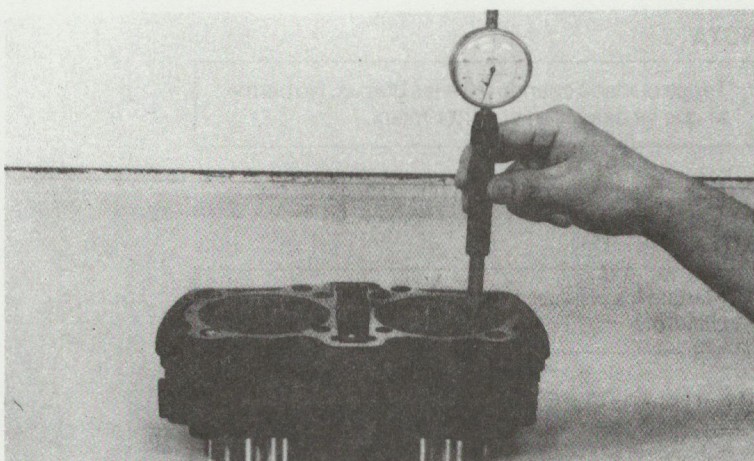
• CYLINDER INSPECTION

Inspect the cylinder bores regarding wear.

SERVICE LIMIT: 75.10 mm (2.957 in)

NOTE

Check the cylinder I.D. in two directions at right angles at three locations (top, middle and bottom).



Inspect the top of the cylinders regarding warpage.
Check in an X pattern as shown.

SERVICE LIMIT: 0.10 mm (0.004 in)

PISTON REMOVAL

Remove each piston pin clip by means of a pliers.

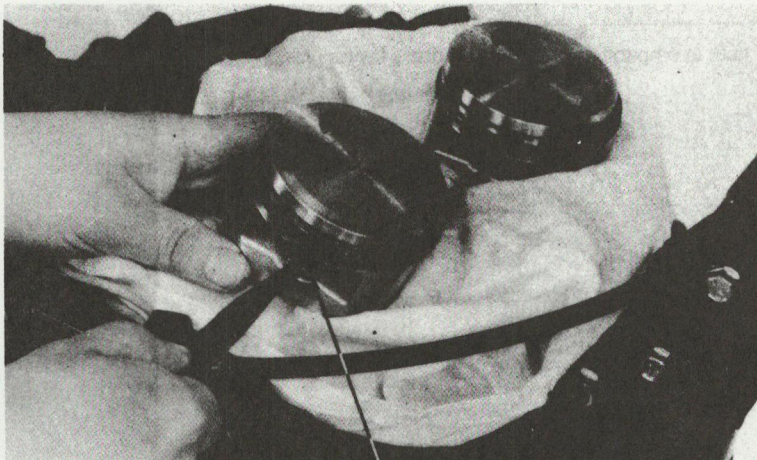
NOTE

Be careful when removing clips to keep them from falling into the crankcase.

Press the piston pin out of the piston.

NOTE

Mark the pistons to indicate the cylinder positions.



PISTON PIN CLIP

CYLINDERS/PISTONS

• PISTON/PISTON RING INSPECTION

Inspect the piston ring-to groove clearance.

SERVICE LIMIT:

TOP: 0.10 mm (0.004 in)

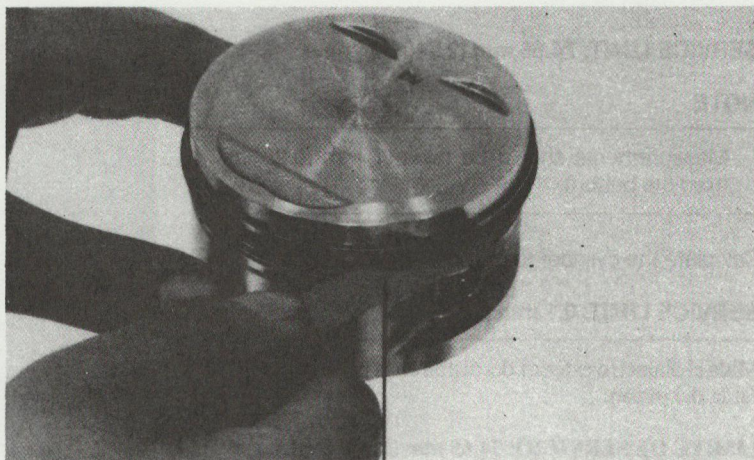
SECOND: 0.10 mm (0.004 in)

Remove the piston rings.

NOTE

Mark the rings in such a way that they can be returned to their original locations.

Inspect the pistons regarding damage and cracks and the ring grooves regarding wear.



FEELER GAUGE

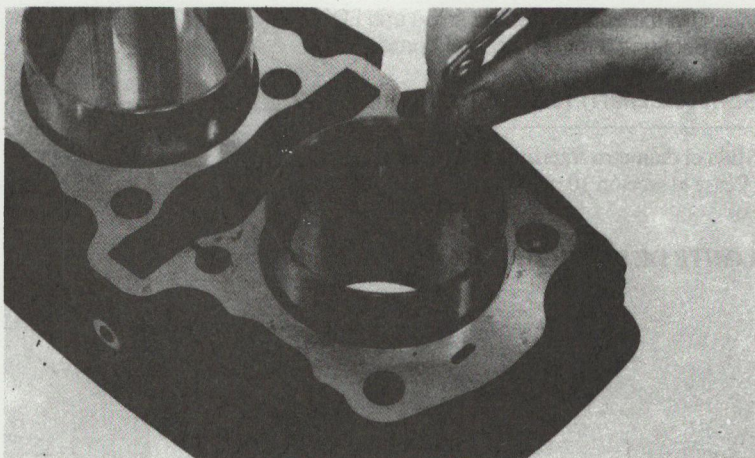
Insert each piston ring into the cylinder and inspect the ring end gap.

SERVICE LIMIT:

TOP: 0.50 mm (0.020 in)

SECOND: 0.50 mm (0.020 in)

OIL (Side rail): 1.10 mm (0.043 in)



Measure the piston O.D. at the skirt.

SERVICE LIMIT: 74.65 mm (2.940 in)

NOTE

Measurements should be taken 7 mm (0.28 in) from the bottom.

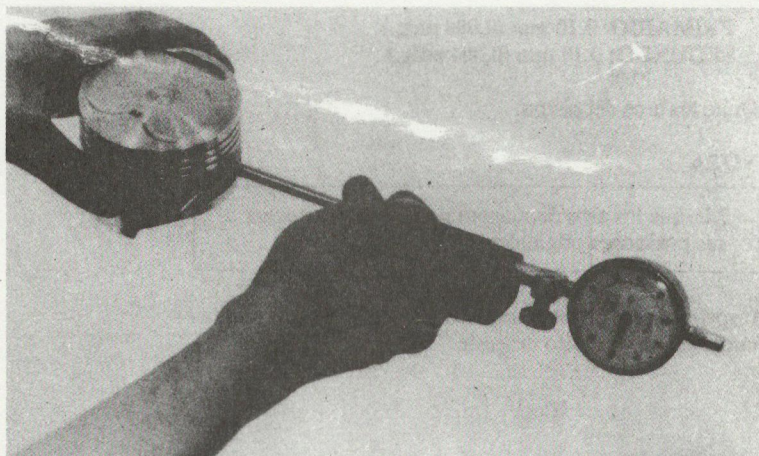
Calculate the cylinder-to-piston clearance.

SERVICE LIMIT: 0.1 mm (0.004 in)



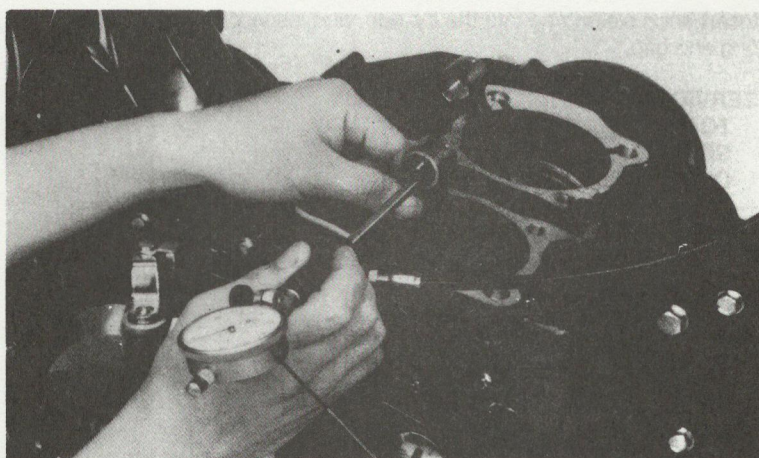
Inspect the piston pin hole I.D..

SERVICE LIMIT: 18.04 mm (0.710 in)



Measure the connecting rod small end I.D..
(See Section 10 for replacement procedure)

SERVICE LIMIT: 18.06 mm (0.717 in)



INSIDE DIAL GAUGE

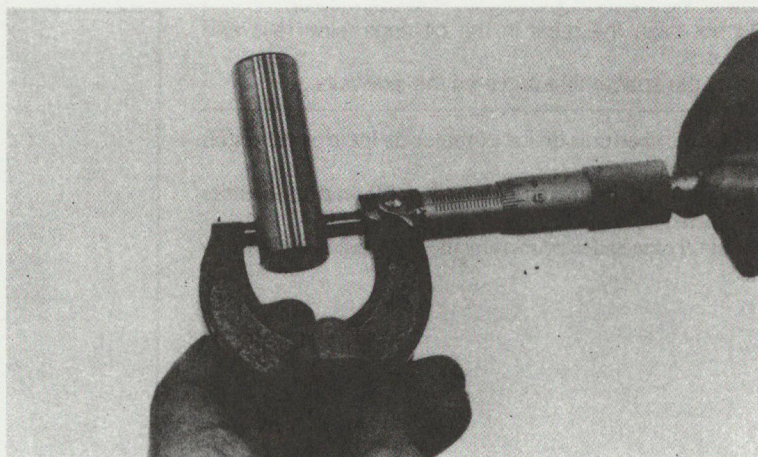
CYLINDERS/PISTONS

Measure the piston pin O.D..

SERVICE LIMIT: 17.98 mm (0.707 in)

Determine the piston-to-piston pin clearance.

SERVICE LIMIT: 0.04 mm (0.0016 in)

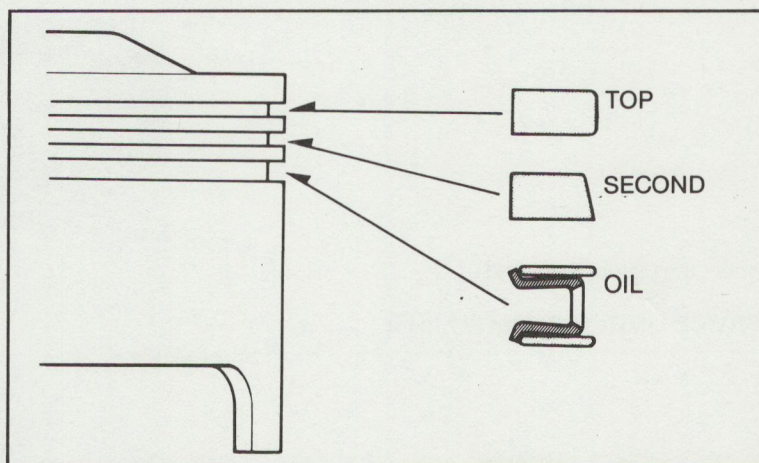


• **PISTON RING INSTALLATION**

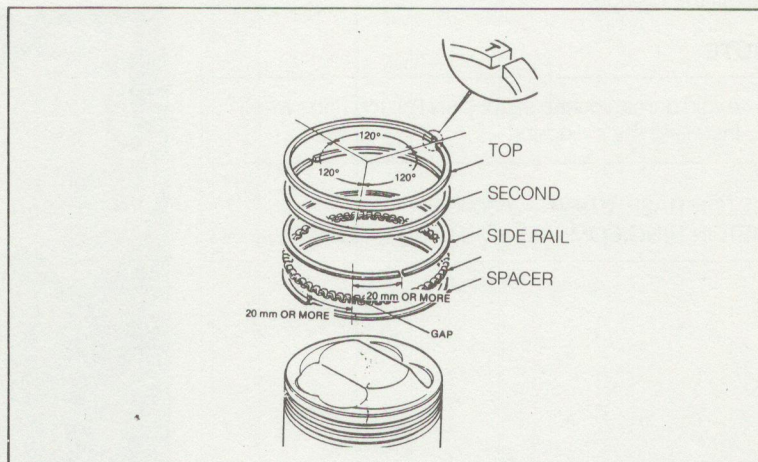
Install the piston rings.

NOTE

- Avoid piston and piston ring damage during installation.
- All rings should be installed with the markings facing up.
- After installation the rings should be free to rotate in the ring grooves.



Space the piston ring end gaps 120 degrees apart.
Do not align the gaps in the oil rings (side rails and spacer).
Install the spacer first and then the side rails.

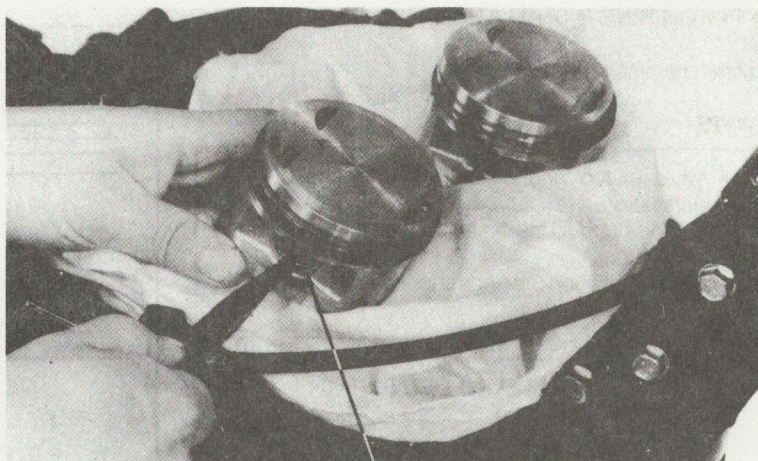


PISTON INSTALLATION

Install the pistons, piston pins and clips.

NOTE

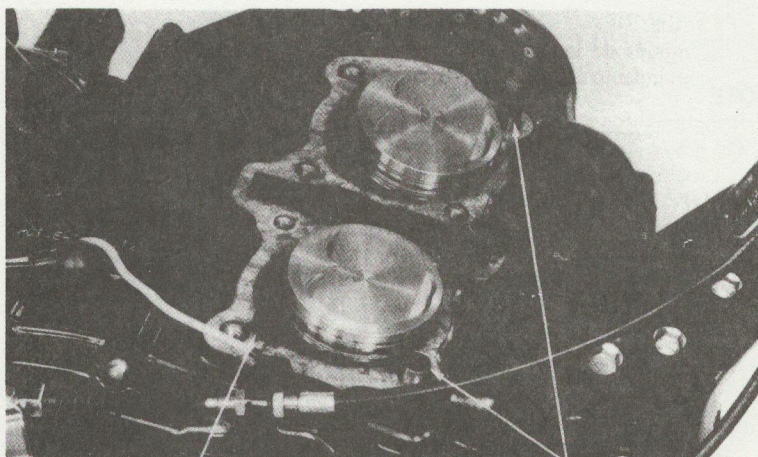
- Position the mark "IN" on the piston on the intake valve side.
- Install the pistons in their original locations.



PISTON PIN CLIP

CYLINDER INSTALLATION

Install the dowel pins and the cylinder gasket.



GASKET

DOWEL PINS

CYLINDERS/PISTONS

Install the cylinder.

NOTE

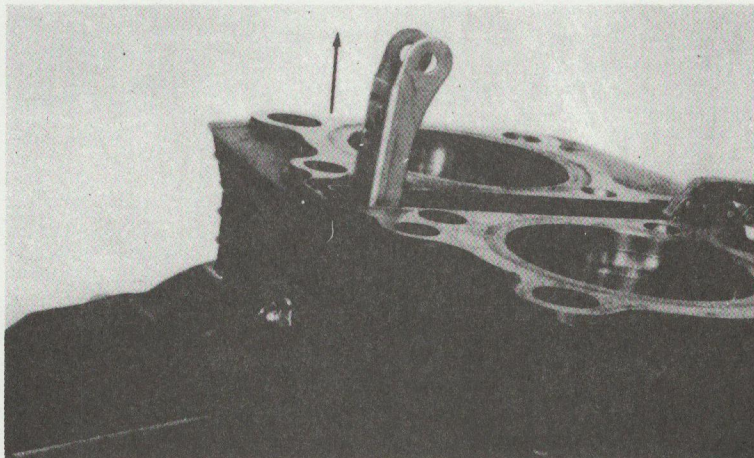
Avoid damaging the pistons and piston rings when installing the cylinders.

PISTON BASE: 07958—2500000

PISTON RING COMPRESSOR: 07954—2830000



Install the tensioner base on the cylinder with the sealing washer and the lock nut. Tighten the lock nut while pulling up the tensioner base fully.

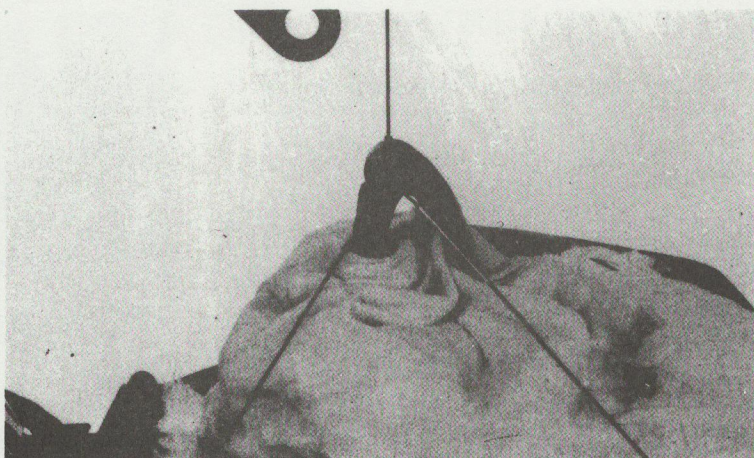


CLIP

Install the tensioner on the tensioner base with the pin and the clip.

NOTE

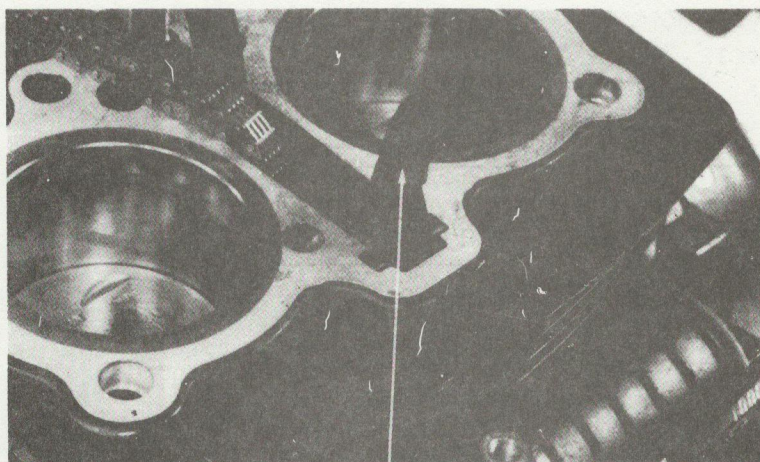
Do not drop the pin or clip into the cylinder.



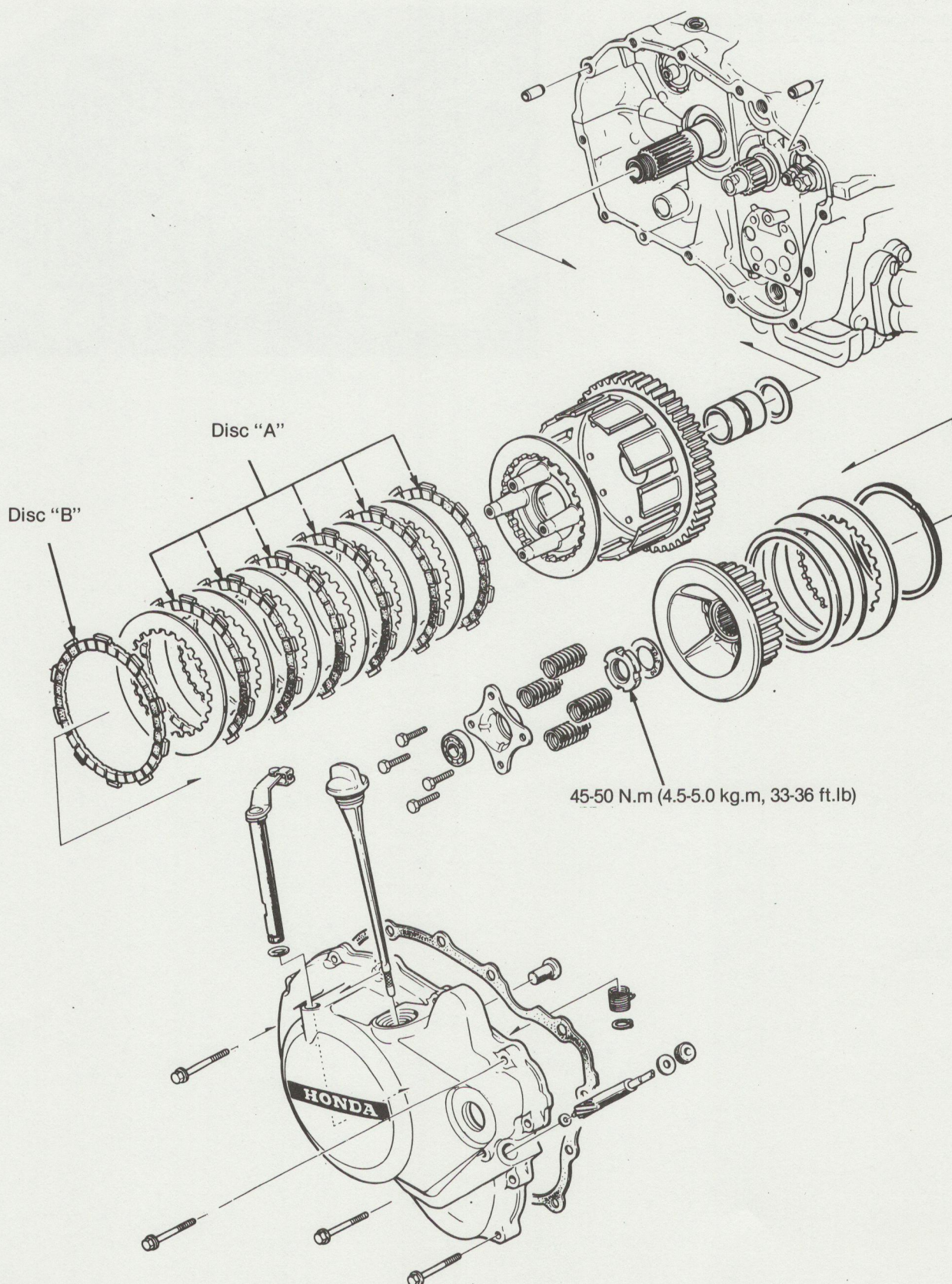
TENSIONER BASE

PIN

Install the cam chain guide.
Install the cylinder head (Refer to Section 6).



CAM CHAIN GUIDE



SERVICE INFORMATION	8-1
TROUBLESHOOTING	8-2
RIGHT CRANKCASE COVER REMOVAL	8-3
CLUTCH	8-4
RIGHT CRANKCASE COVER INSTALLATION	8-10
OIL PUMP	8-11
OIL PRESSURE RELIEF VALVE	8-16
GEARSHIFT LINKAGE	8-17

SERVICE INFORMATION

• WORKING PRACTICE

This section covers the removal and installation of the clutch, the oil pump and the oil pressure relief valve, starting with the right crankcase cover. The removal and installation of the gearshift linkage, the adjustment of the crankshaft balancer, and the removal and installation of the oil pressure switch should also be performed by first removing the right crankcase cover. All these operations can be accomplished with the engine in the frame.

• SPECIAL TOOLS

CLUTCH CENTER HOLDER 07923—9580000
GEAR HOLDER 07724—0010100

COMMON TOOLS

UNIVERSAL HOLDER 07725—0030000
LOCK NUT SOCKET WRENCH 07716—0020203

• SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Clutch	Lever free play (at lever end)	10—20 mm (3/8—3/4 in)	—
	Disc spring-to-clutch center clearance	0.1—0.5 mm (0.004—0.020 in)	—
	Spring free length	42.50 mm (1.673 in)	41.00 mm (1.614 in)
	Spring preload/length	23.6—26.4 kg/29 mm (52.1—58.3 lbs/1.14 in)	22 kg/29 mm (48.5 lbs/1.14 in)
	Disc thickness	A	2.7 mm (0.106 in)
		B	3.0 mm (0.118 in)
	Plate warpage	A	—
		B	—
	Clutch outer I.D.	32.000—32.025 mm (1.260—1.261 in)	33.07 mm (1.301 in)
	Clutch outer guide O.D.	31.959—31.975 mm (1.258—1.259 in)	31.90 mm (1.256 in)
Oil pump	Inner rotor-to-outer rotor clearance	—	0.10 mm (0.004 in)
	Outer rotor-to-body clearance	—	0.35 mm (0.014 in)
	Rotor-to-body clearance	—	0.10 mm (0.004 in)
Oil pressure relief valve	Relief pressure	4.0—5.3 kg/cm ² (56.9—75.4 psi)	—

TROUBLESHOOTING

Clutch

Faulty clutch operation can usually be corrected by adjusting the free play.

Clutch slips when accelerating

1. No free play
2. Worn discs
3. Weak springs

Clutch will not disengage

1. Too much free play
2. Warped plates

Oil pump

Low oil pressure

1. Faulty pump rotors
2. Damaged pump drive gear

Motorcycle Creeps With Clutch Disengaged

1. Too much free play
2. Warped plates

Excessive lever pressure

1. Kinked, damaged or dirty clutch cable
2. Damaged lifter mechanism

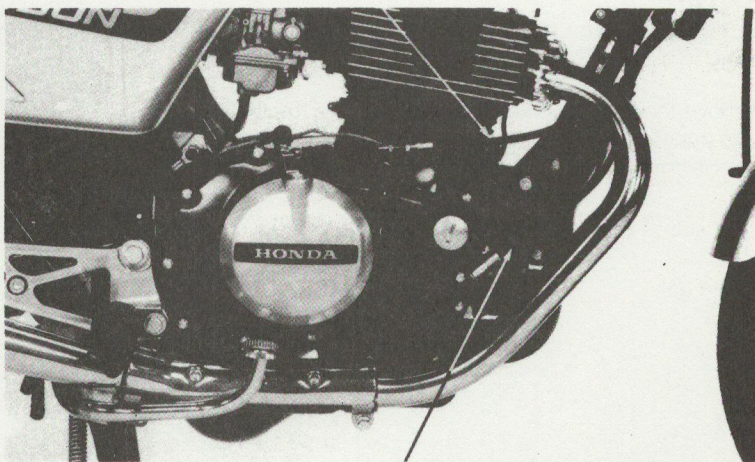
Clutch operation feels rough

1. Rough outer drum slots

RIGHT CRANKCASE COVER REMOVAL

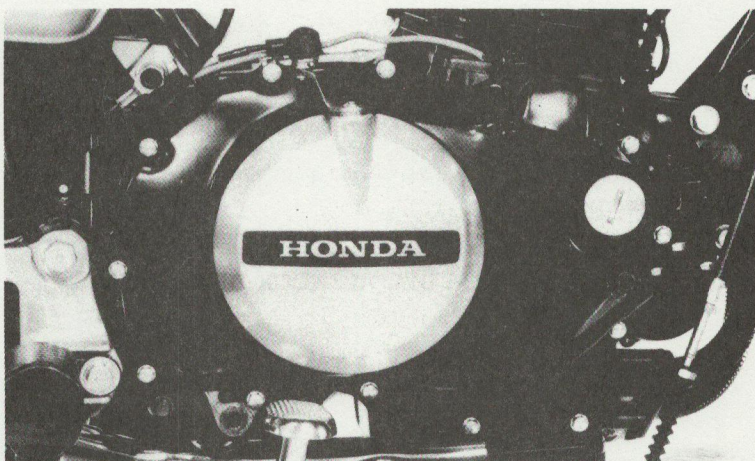
Drain all oil from the engine.
Disconnect the tachometer cable.
Disconnect the clutch cable at the clutch lever clevis.
Remove the right exhaust pipe.

CLUTCH CABLE



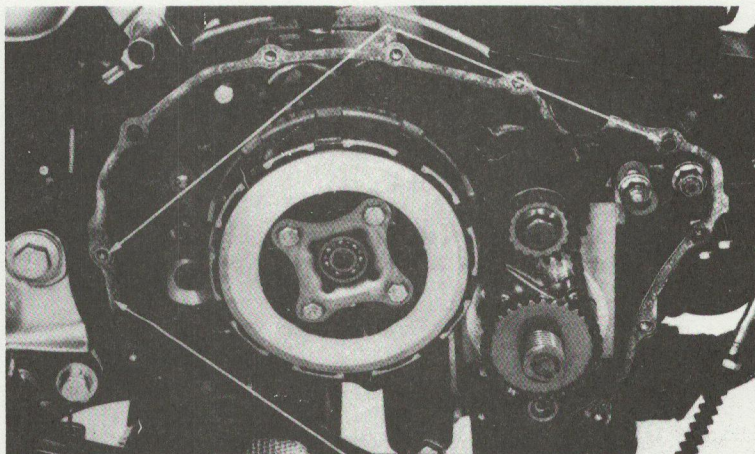
TACHOMETER CABLE

Remove the bolts and remove the right crankcase cover.



DOWEL PINS

Remove the gasket and the dowel pins.



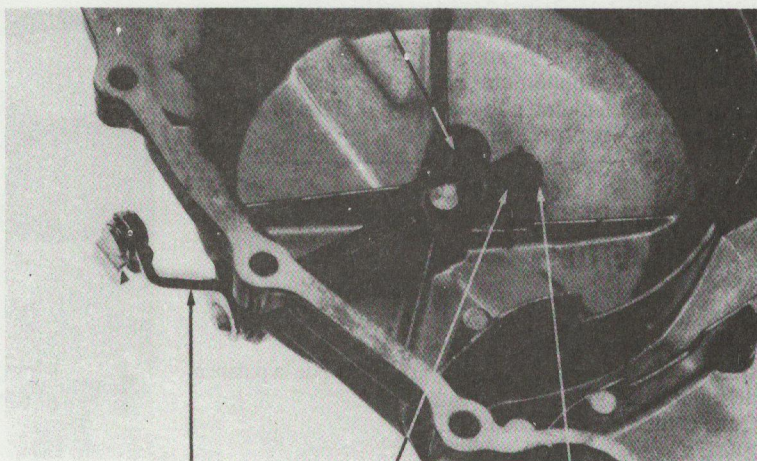
GASKET

CLUTCH

• CLUTCH LIFTER REMOVAL

Remove the lifter pin, the circlip, the spring, the clutch lever and the O-ring.

LIFTER PIN



CLUTCH LEVER

SPRING

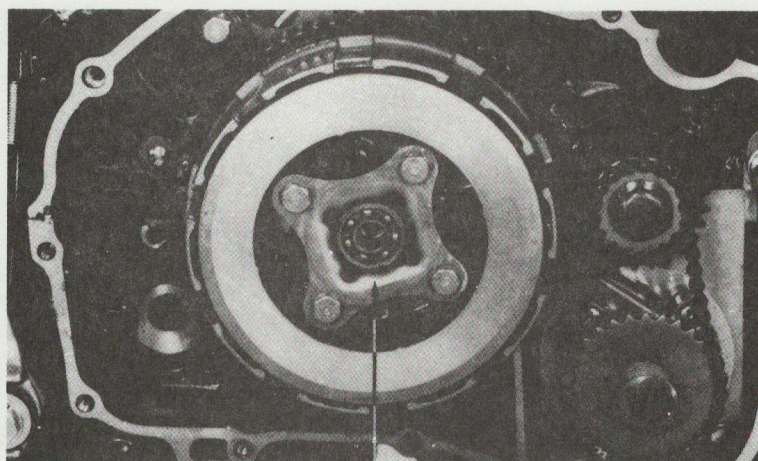
CIRCLIP

• CLUTCH LIFTER PLATE REMOVAL

Remove the bolts, the lifter plate and the clutch springs.

NOTE

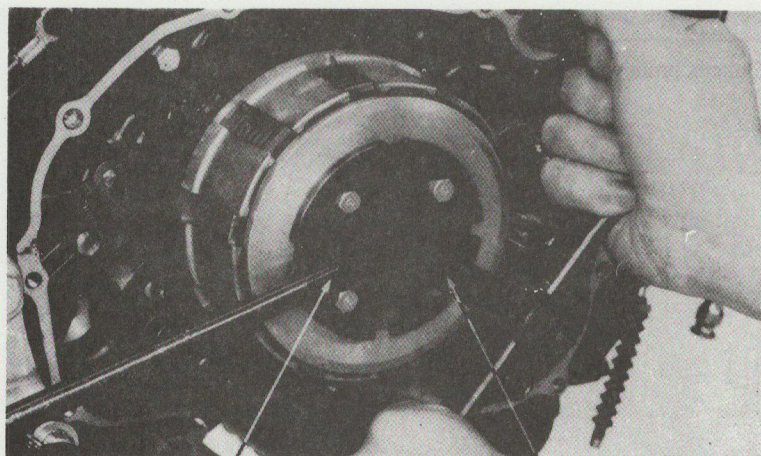
Loosen the bolts in an X pattern in two or more steps.



LIFTER PLATE

• CLUTCH REMOVAL

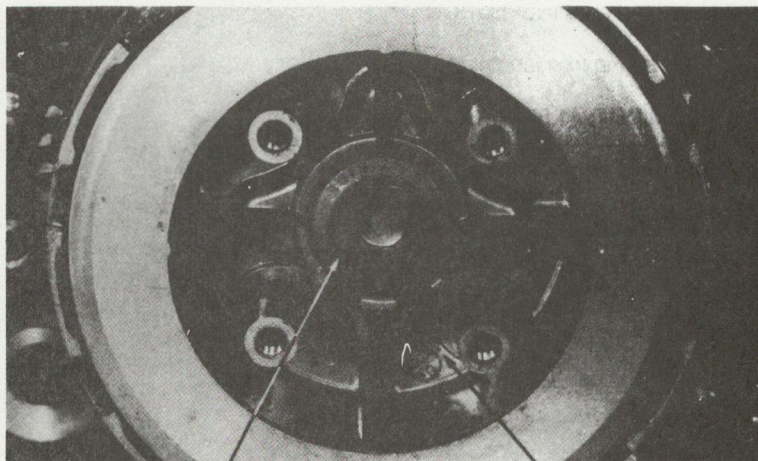
Hold the clutch by means of the clutch holder.
Remove the lock nut by means of the lock nut socket wrench.



CLUTCH CENTER HOLDER

LOCK NUT SOCKET WRENCH

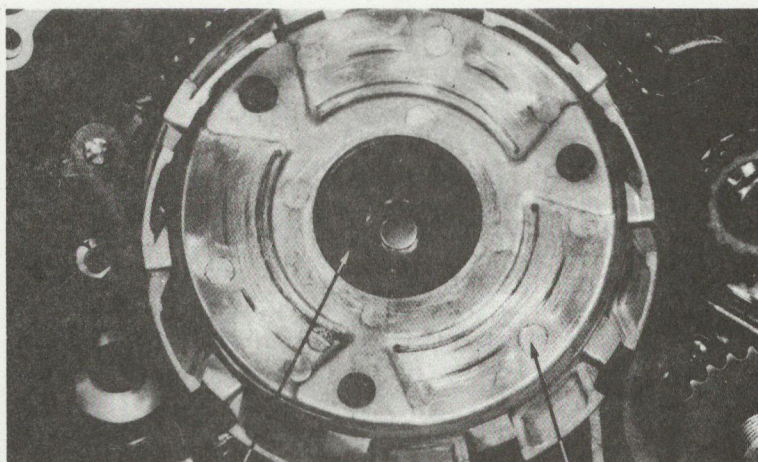
Remove the lock washer and the clutch center.
Remove the clutch discs A and B and the clutch plate.



LOCK WASHER

CLUTCH CENTER

Remove the thrust washer and the clutch outer.



THRUST WASHER

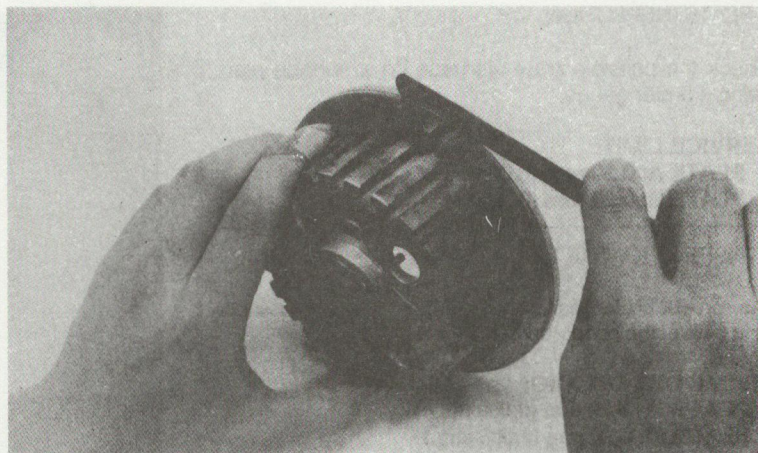
CLUTCH OUTER

• DISC SPRING INSPECTION

Measure the clearance between the clutch center and the plate B.

SERVICE LIMIT: 0.1—0.5 mm (0.004—0.020 in)

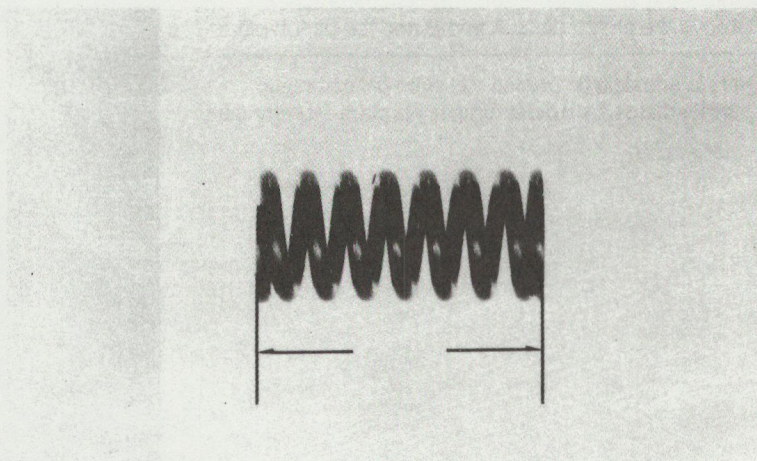
After measuring, remove the set ring, the clutch plate B, the clutch disc spring and the spring seats.



- CLUTCH SPRING INSPECTION

Check the spring free length.

SERVICE LIMIT: 41.00 mm (1.614 in)



- CLUTCH DISC INSPECTION

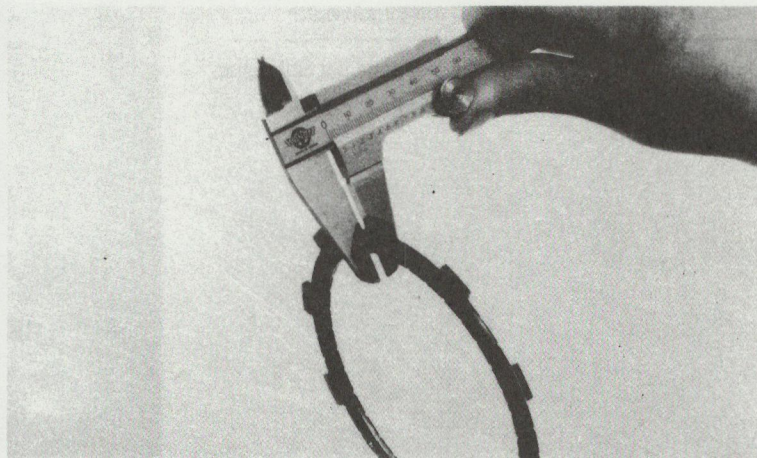
Replace the clutch discs if they show signs of scoring or discoloration.

Measure the disc thickness.

SERVICE LIMITS:

DISC A: 2.30 mm (0.090 in)

DISC B: 2.60 mm (0.102 in)



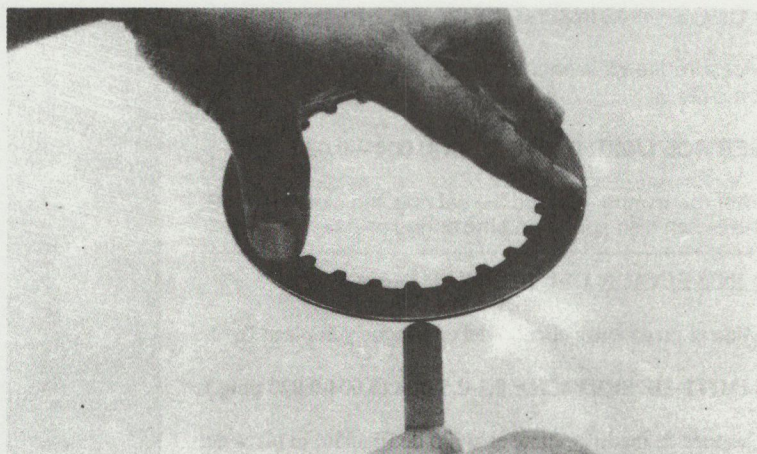
- PLATE INSPECTION

Check the possible plate warpage on a surface plate, using a feeler gauge.

SERVICE LIMIT:

PLATE A: 0.20 mm (0.008 in)

PLATE B: 0.20 mm (0.008 in)

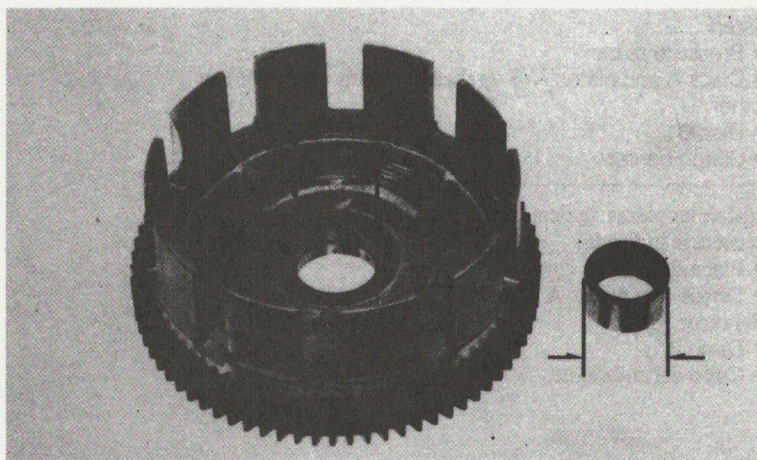


• CLUTCH OUTER AND OUTER GUIDE INSPECTION

Check the slots in the outer drum for nicks, cuts or indentations made by the friction discs. Measure the I.D. of the clutch outer and the O.D. of the outer guide.

SERVICE LIMITS:

CLUTCH OUTER I.D.: 33.07 mm (1.020 in)
OUTER GUIDE O.D.: 31.90 mm (1.256 in)

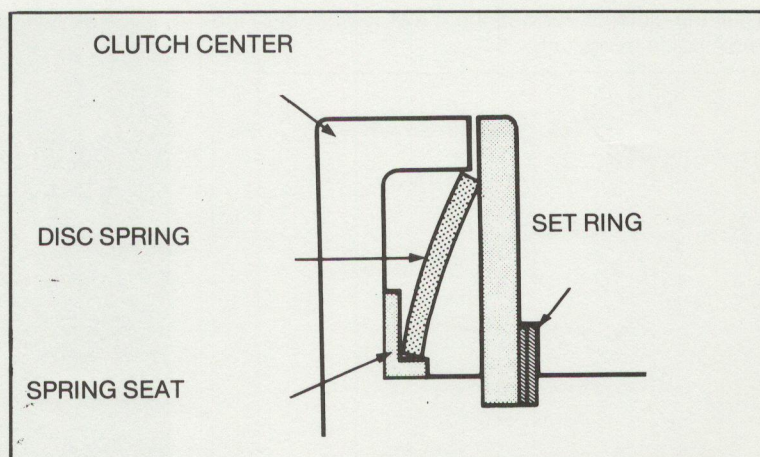


• CLUTCH INSTALLATION

Install the spring seat, the disc spring, the clutch plate B and the set ring in the clutch center.

NOTE

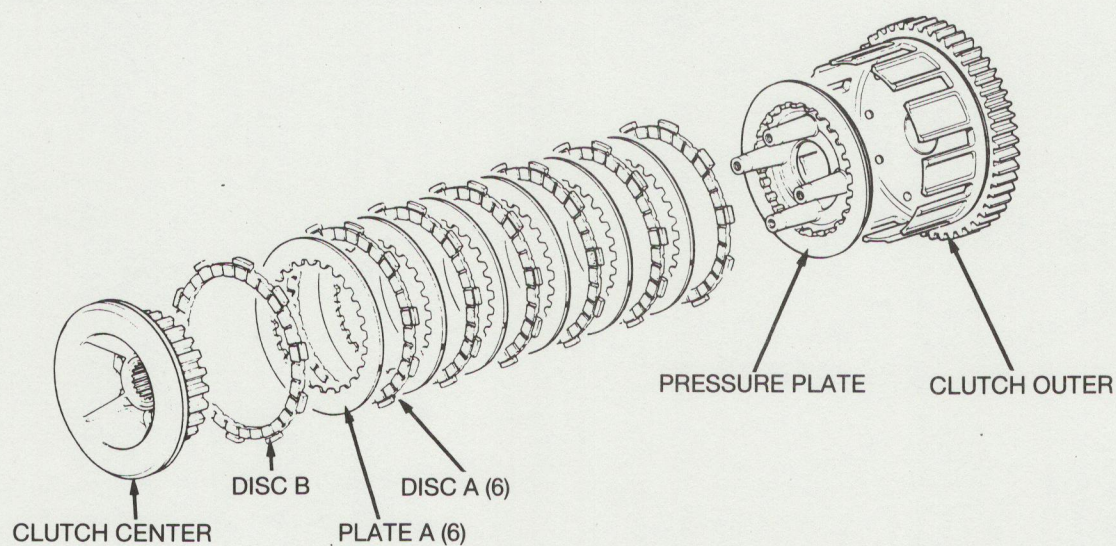
- Note the direction of the spring seat, the spring and the plate B.
- Make sure that the set ring is securely seated in the clutch center groove.



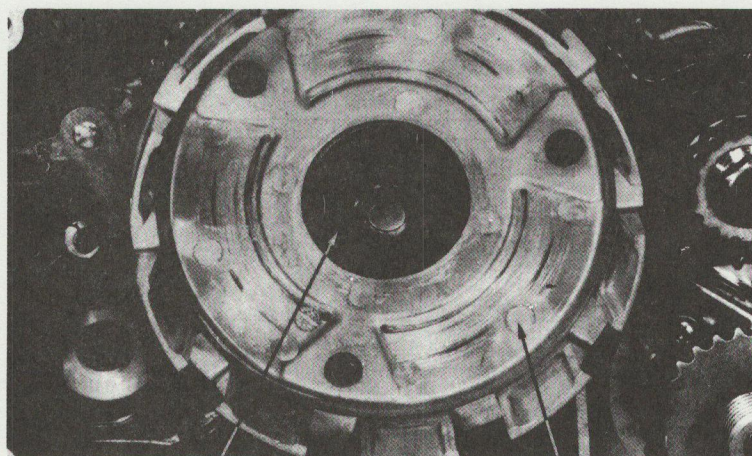
CLUTCH / OIL PUMP

Install the following parts in the clutch outer in the order listed.

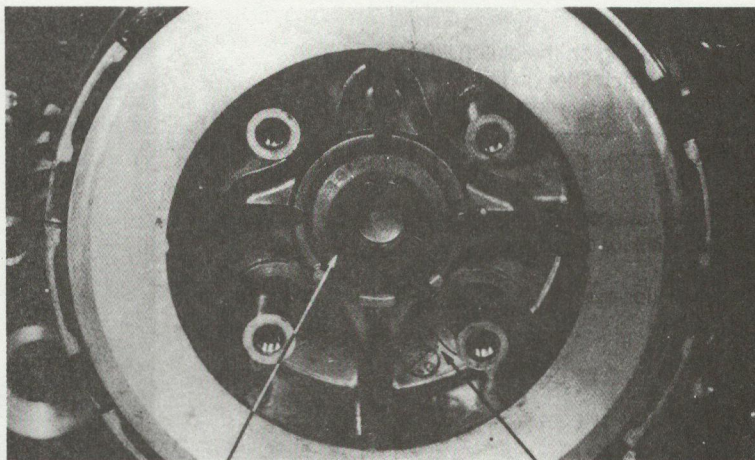
- Pressure plate
- Discs A and plates A (6 each) alternately one after the other
- Disc B
- Clutch center



Install the clutch outer and the thrust washer onto the transmission mainshaft.



Install the clutch pressure plate, the disc A, the plate, the disc B and the clutch center as a unit.
Install the lock washer with the mark "OUTSIDE" facing out.



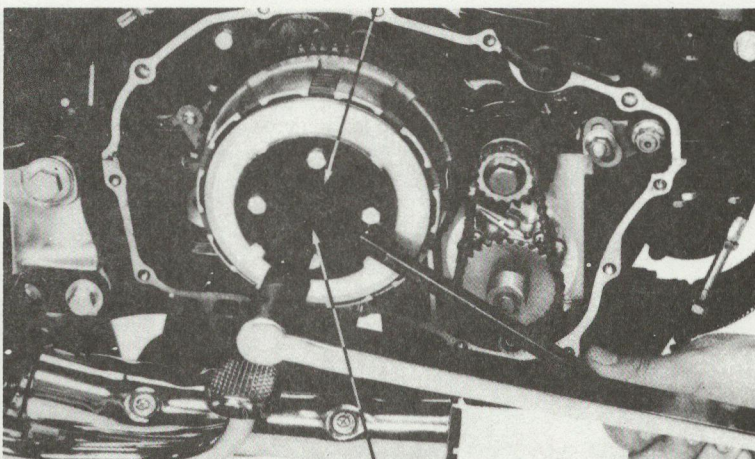
LOCK WASHER

CLUTCH CENTER

CLUTCH CENTER HOLDER

Hold the clutch by means of the clutch center holder.
Tighten the lock nut by means of the lock nut wrench.

TORQUE: 45—50 N.m (4.5—5.0 kg.m, 33—36 ft.lb)

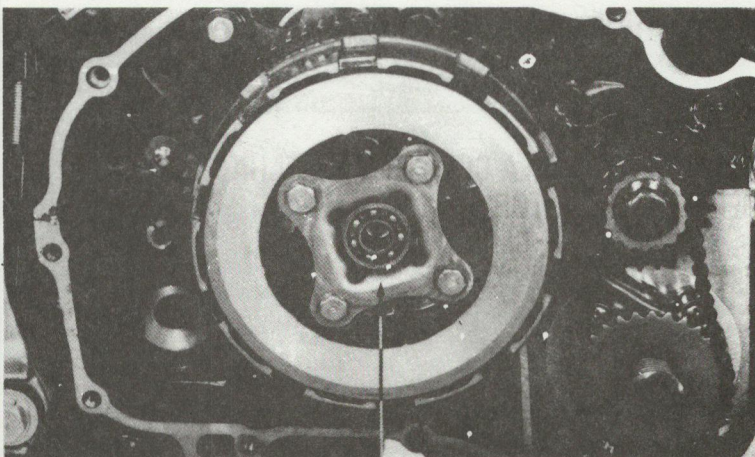


LOCK NUT SOCKET WRENCH

Install the clutch springs, the lifter plate and the lifter plate bolts.

NOTE

Tighten the bolts in two or more steps and in a criss cross pattern.

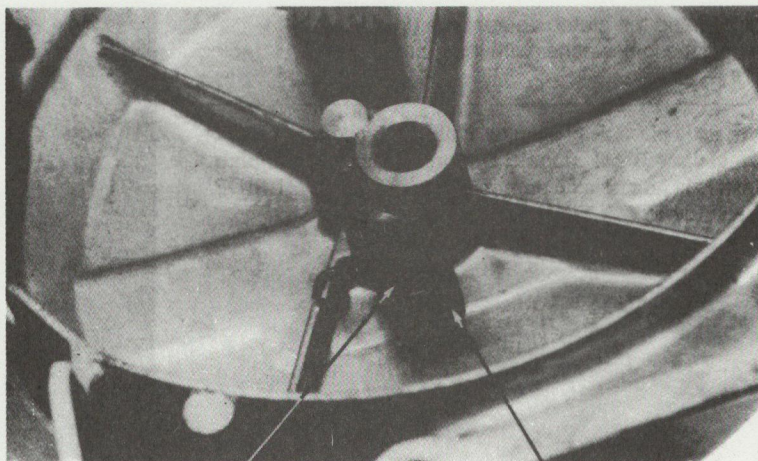


LIFTER PLATE

CLUTCH / OIL PUMP

• CLUTCH LIFTER INSTALLATION

Install the O-ring on the clutch lifter.
Install the clutch lifter on the crankcase cover.
Secure the lifter by means of the spring and the circlip.

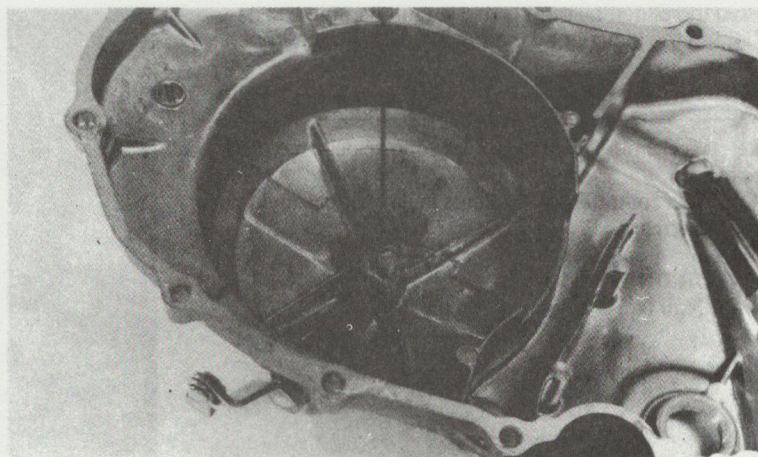


SPRING

CIRCLIP

LIFTER PIN

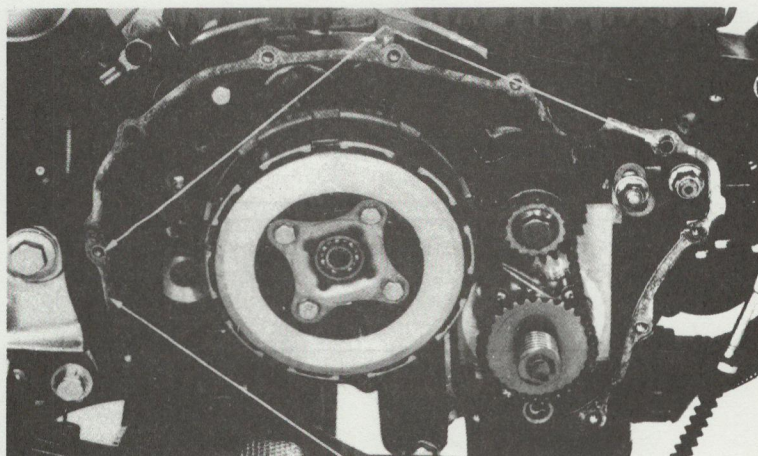
Rotate the lifter about 120 degrees.
Install the lifter pin by aligning the holes.



DOWEL PINS

RIGHT CRANKCASE COVER INSTALLATION

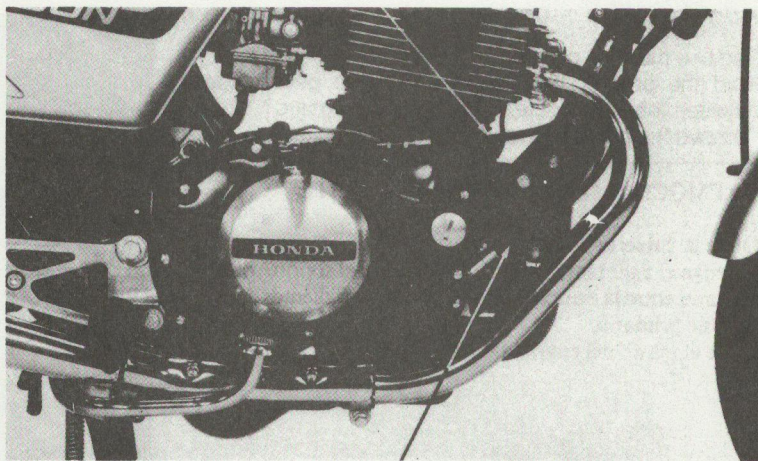
Install the dowel pins and a new gasket.



GASKET

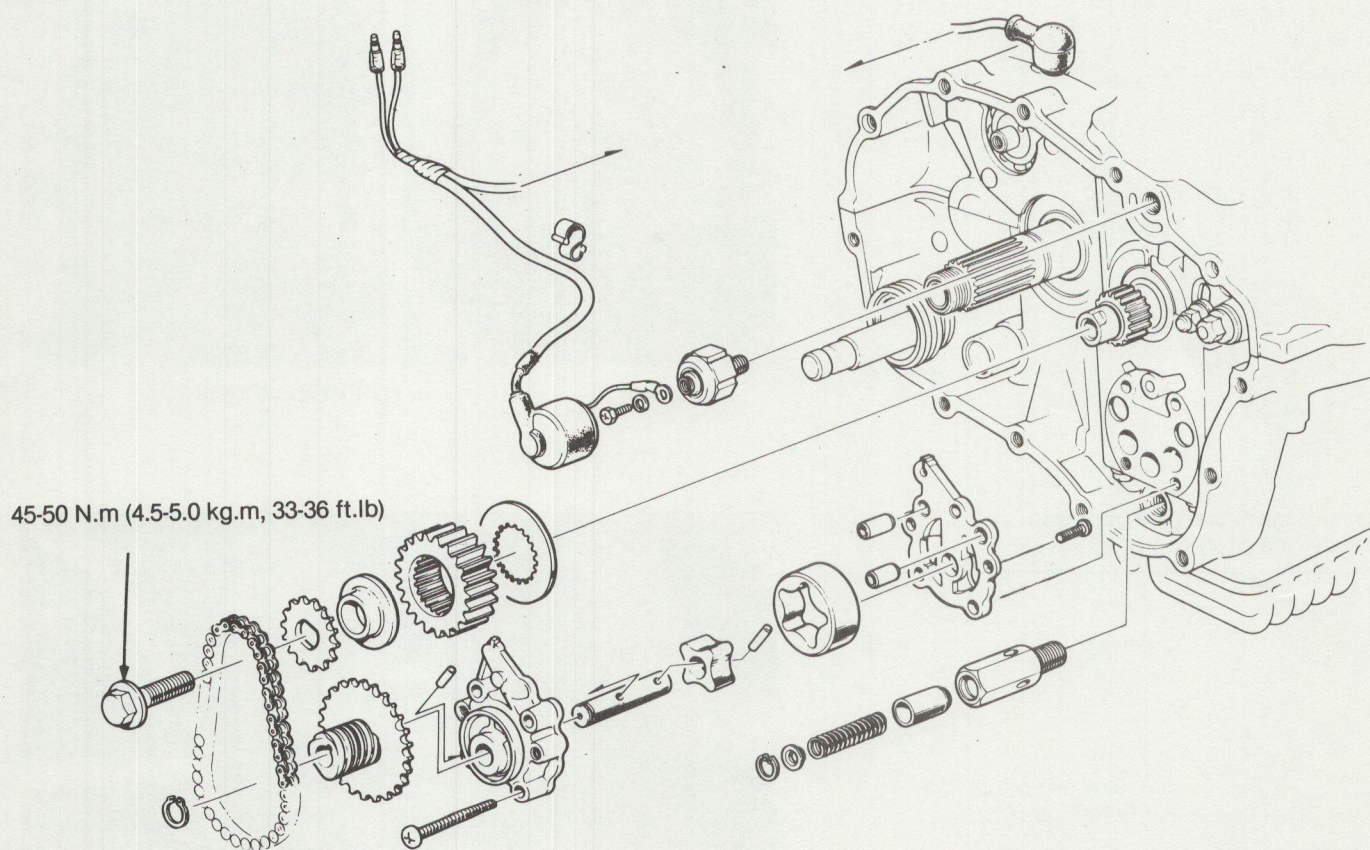
Install the right crankcase cover.
Connect the clutch cable and the tachometer cable.
Install the right exhaust pipe.
Fill the crankcase with recommended grade oil up to the upper level mark on the dipstick.
Adjust the clutch cable (Section 3).

CLUTCH CABLE



TACHOMETER CABLE

OIL PUMP

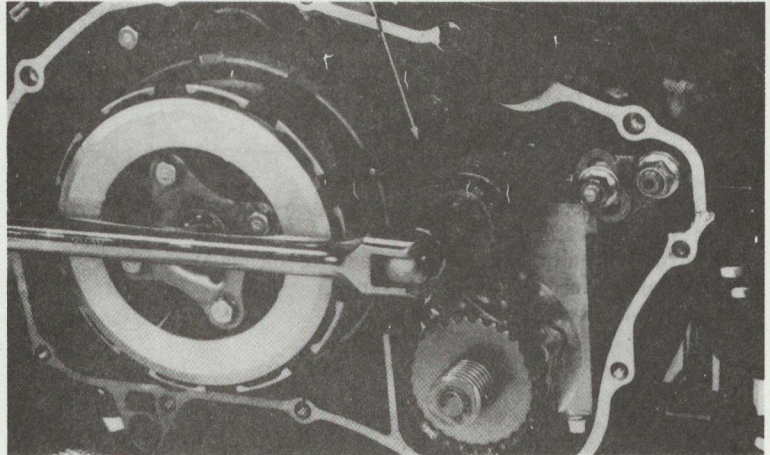


CLUTCH / OIL PUMP

• OIL PUMP REMOVAL

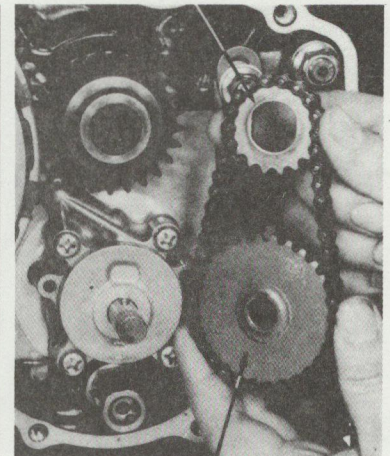
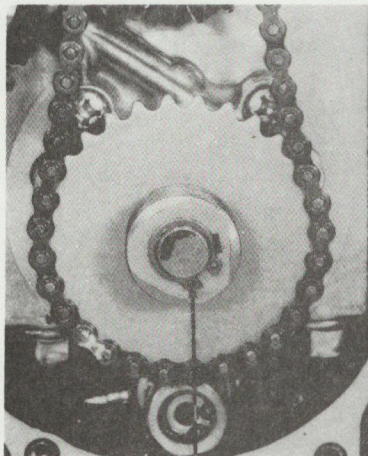
Remove the right crankcase cover.
Hold the primary gear by installing the gear holder between the clutch outer and the primary gears.
Remove the primary drive gear bolt.

GEAR HOLDER



Remove the circlip.
Remove the drive and driven sprockets with the chain.
Pull out the drive pin.

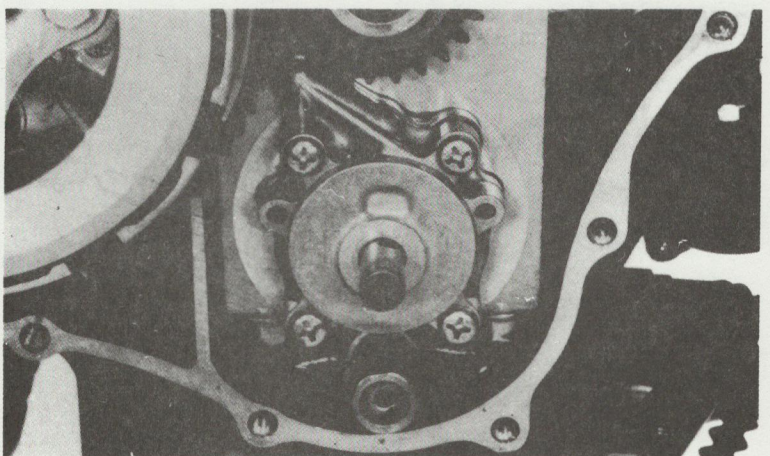
DRIVE SPROCKET



CIRCLIP

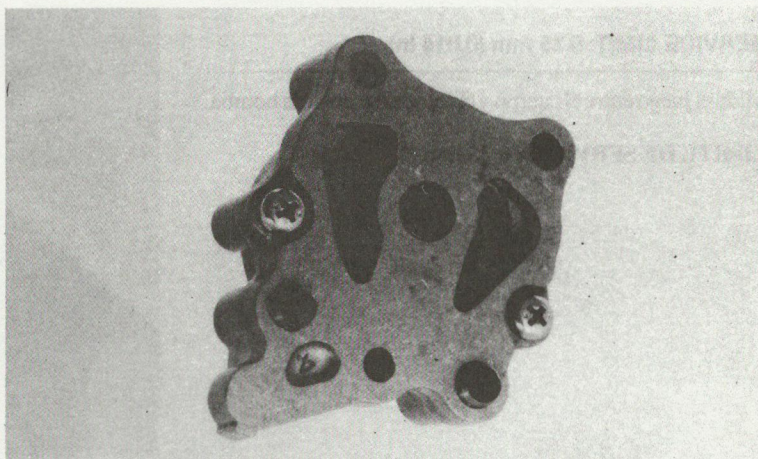
DRIVEN SPROCKET

Remove the oil pump mount screws.
Remove the oil pump.



• OIL PUMP DISASSEMBLY

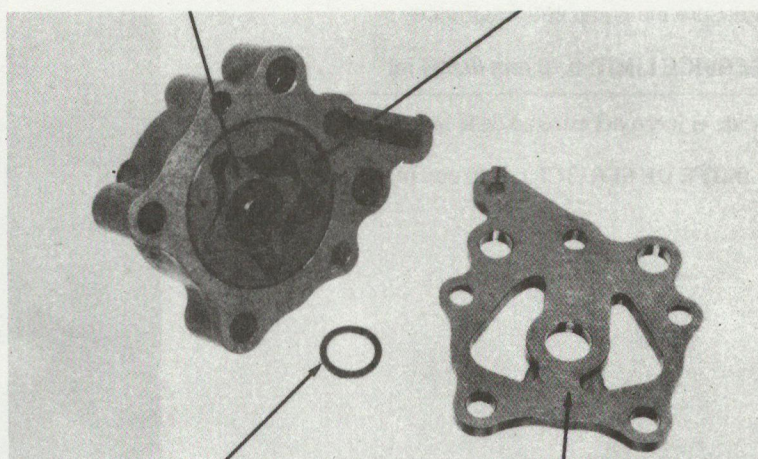
Remove the attaching screws and separate the oil pump cover and body.



INNER ROTOR

OUTER ROTOR

Remove the oil pump cover and the thrust washer.
Withdraw the oil pump shaft.
Remove the inner and the outer rotors from the pump body.



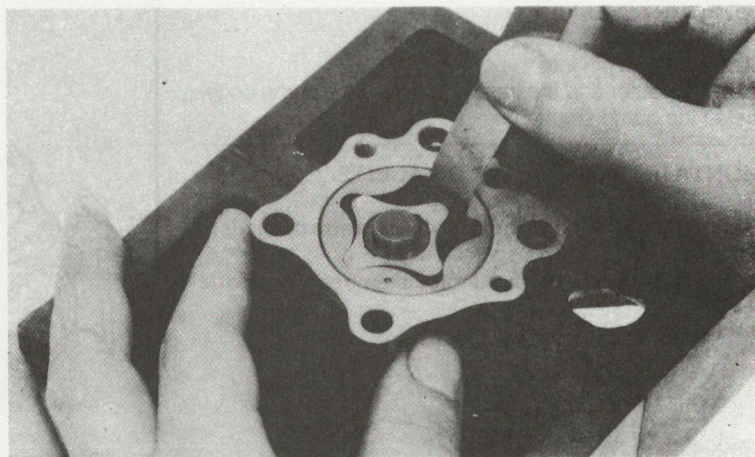
THRUST WASHER

OIL PUMP COVER

OIL PUMP INSPECTION

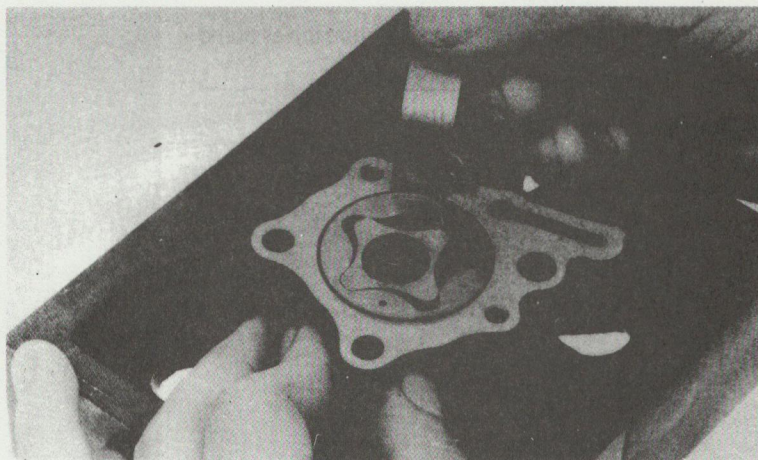
Measure the oil pump inner rotor to outer rotor clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



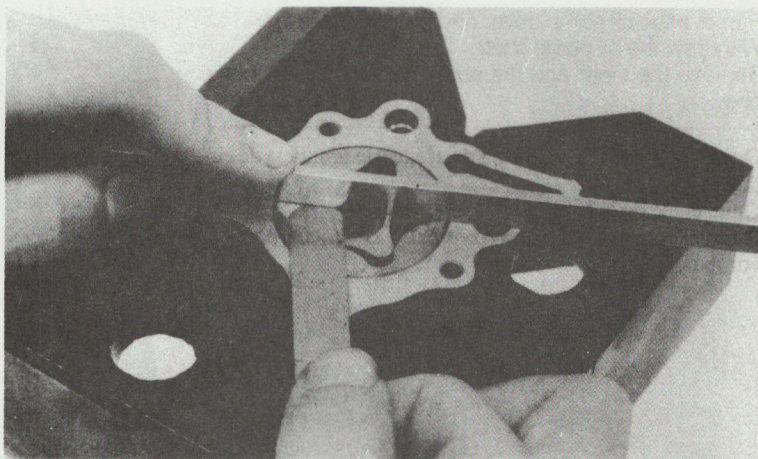
Measure the oil pump body to outer rotor clearance.

SERVICE LIMIT: 0.35 mm (0.014 in)



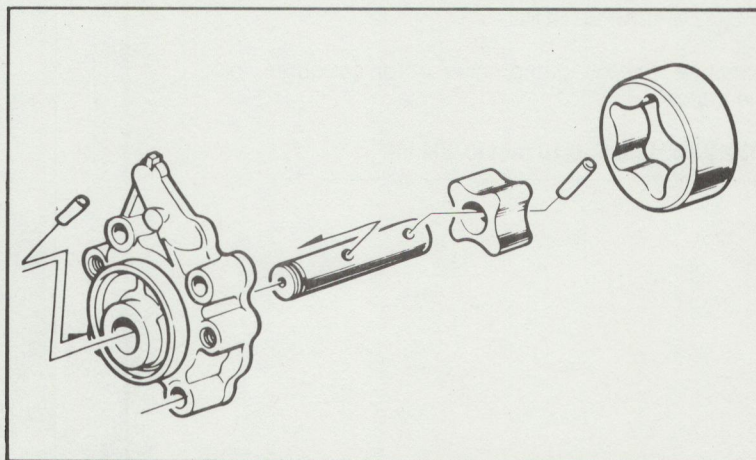
Measure the pump end clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



OIL PUMP ASSEMBLY

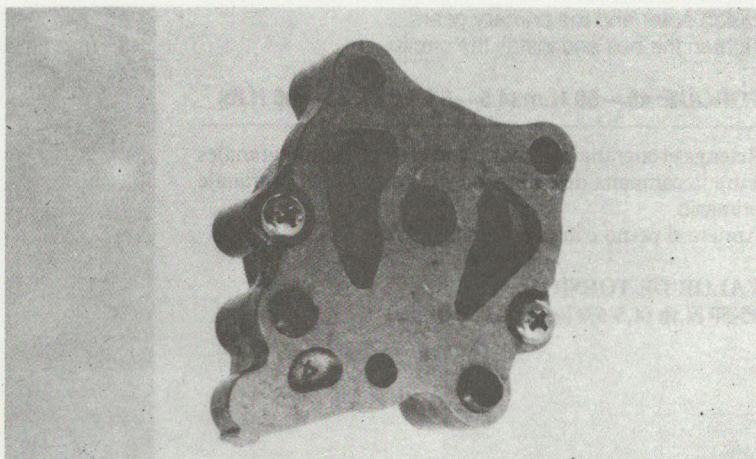
Slide the drive pin into the pump shaft.
Insert the outer and the inner rotors into the pump body.
Install the pump shaft.



Install the thrust washer and the pump cover.

NOTE

Install the pump cover after installing the dowel pins.

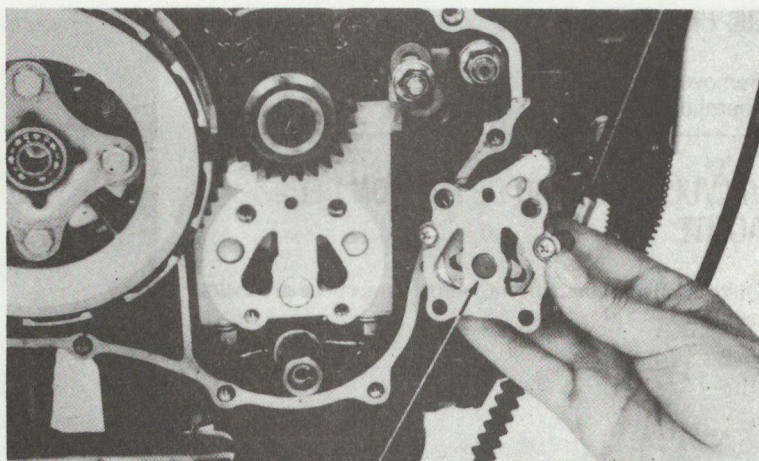


OIL PUMP INSTALLATION

Install the oil pump.

NOTE

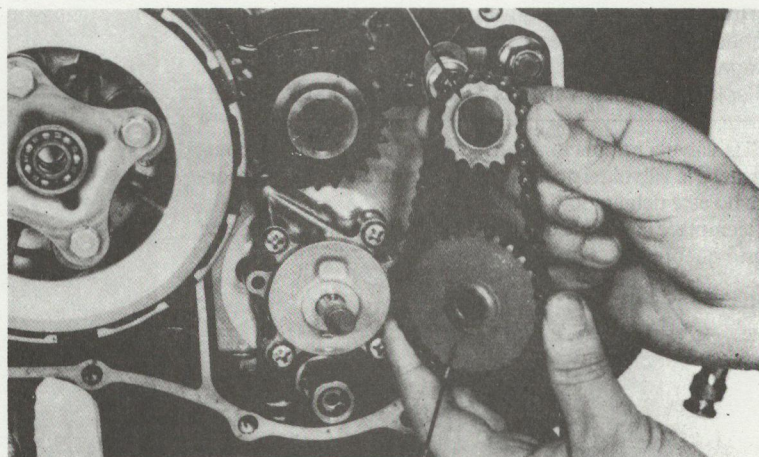
Make sure that the pump rotates freely without binding.



OIL PUMP

DRIVE SPROCKET

Install the drive and driven sprockets with the chain placed over the sprockets as shown.

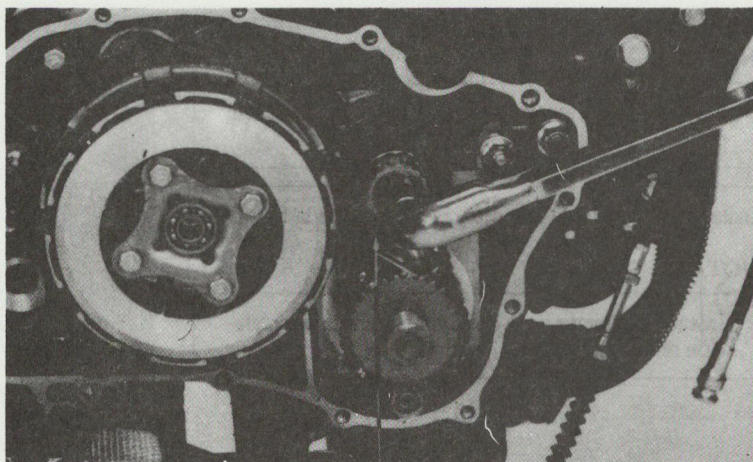


DRIVEN SPROCKET

CLUTCH / OIL PUMP

Hold the primary gear with the gear holder between the clutch outer and the primary gears.
Tighten the bolt and install the circlip.

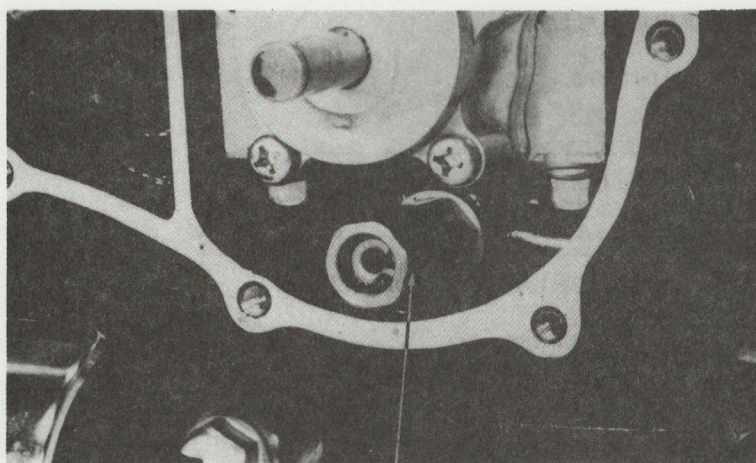
TORQUE: 45—50 N.m (4.5—5.0 kg.m, 33—36 ft.lb)



GEAR HOLDER

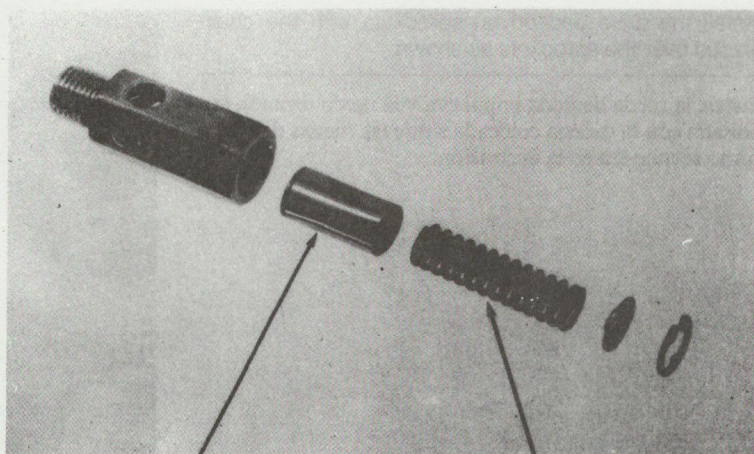
OIL PRESSURE RELIEF VALVE

Remove the valve as an assembly and check the operation.



OIL PRESSURE RELIEF VALVE

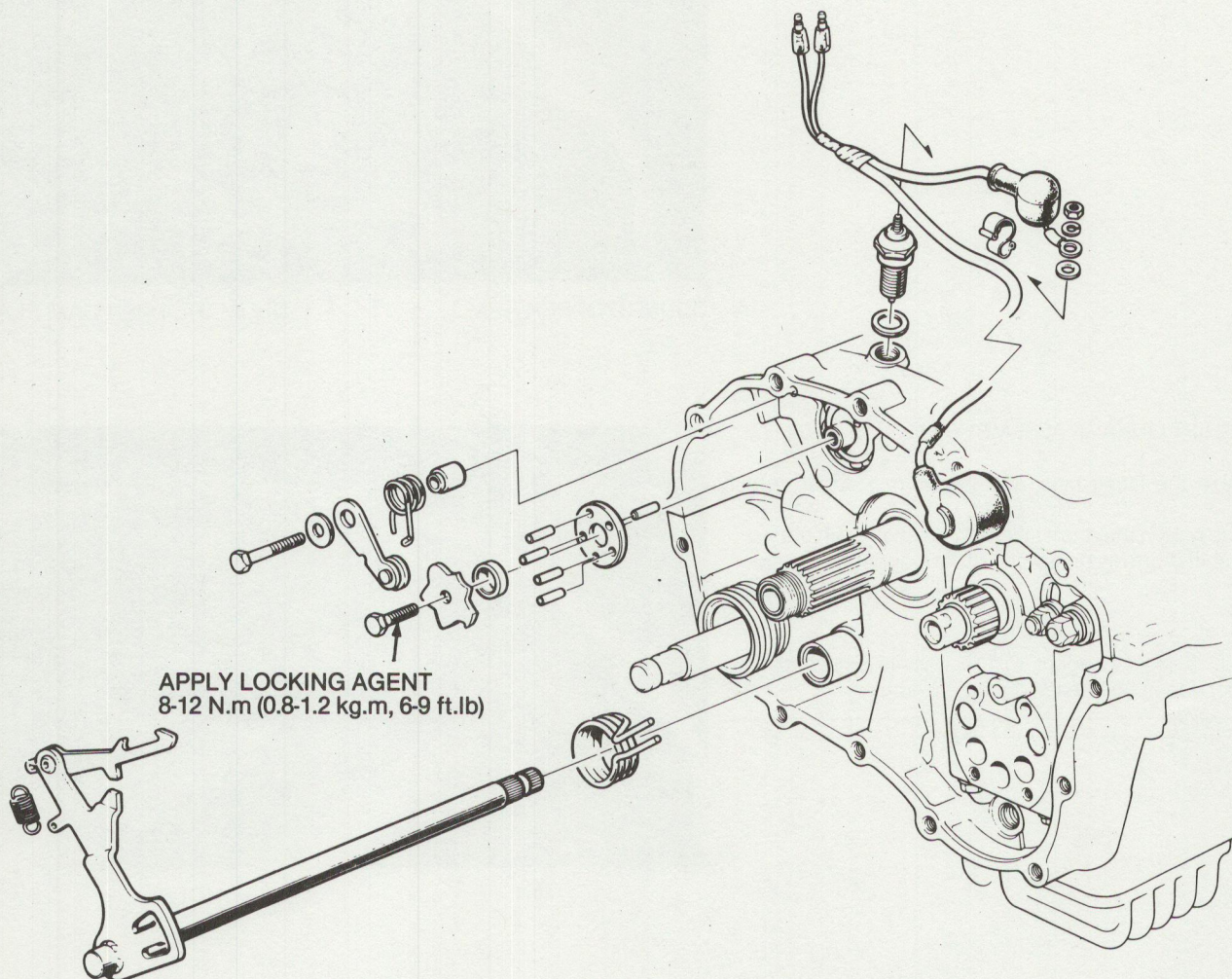
If the valve does not operate properly, disassemble it and check the valve regarding sticking and the spring regarding weakness and damage.
Replace the relief valve as a unit if the spring is broken.



PLUNGER

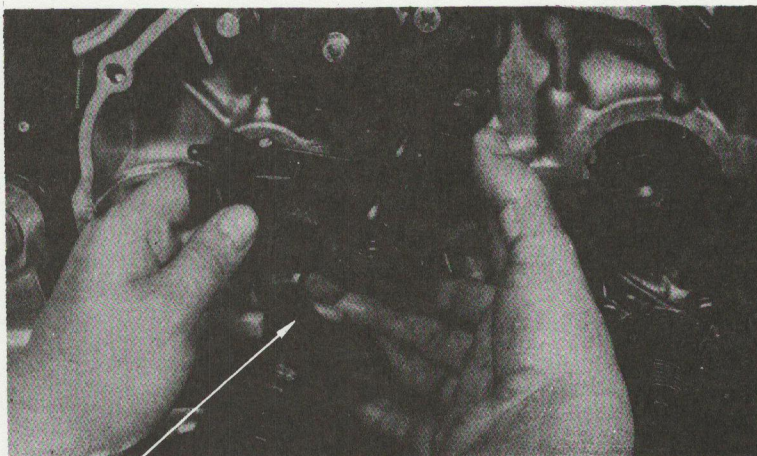
SPRING

GEARSHIFT LINKAGE



GEARSHIFT LINKAGE DISASSEMBLY

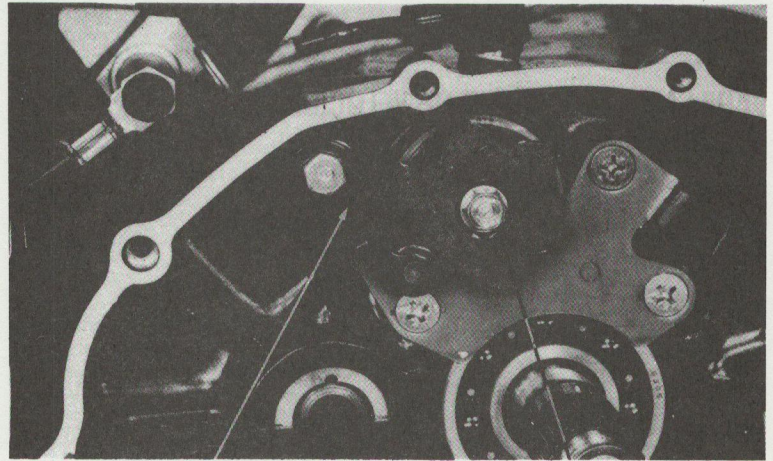
Remove the gearshift pedal.
Remove the clutch.
Remove the gearshift spindle and the gearshift return spring.



GEARSHIFT SPINDLE

CLUTCH / OIL PUMP

Remove the drum stopper arm and the spring.
Remove the stopper cam plate bolt.
Remove the drum stopper cam plate, and the fitting pins.
Inspect all parts regarding wear or damage.



DRUM STOPPER ARM

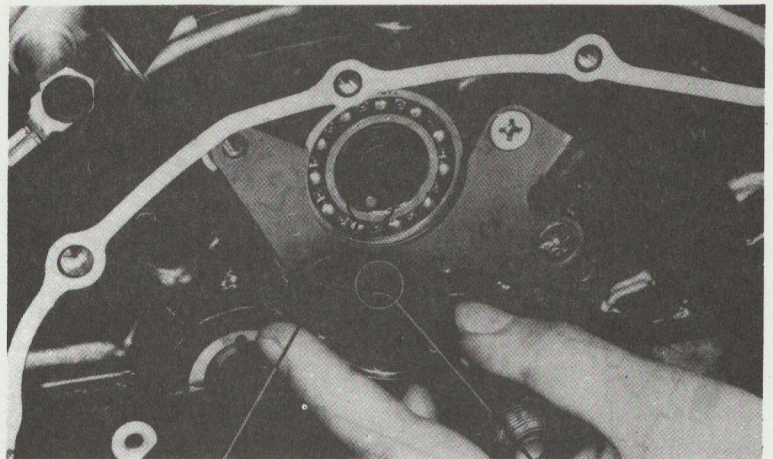
DRUM STOPPER CAM PLATE

GEARSHIFT LINKAGE ASSEMBLY

Assemble the fitting pins, and the drum stopper cam plate.
Align the hole in the drum stopper cam plate with the pin on the shift drum and install the drum stopper cam plate.

NOTE

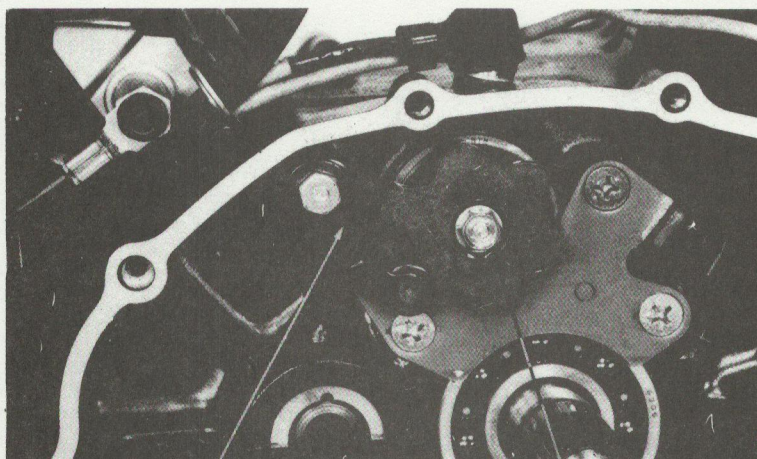
Apply a locking agent to the bolt threads and underside of bolt heads during assembly.



PIN

HOLE

Install the drum stopper arm and spring, noting the spring position.

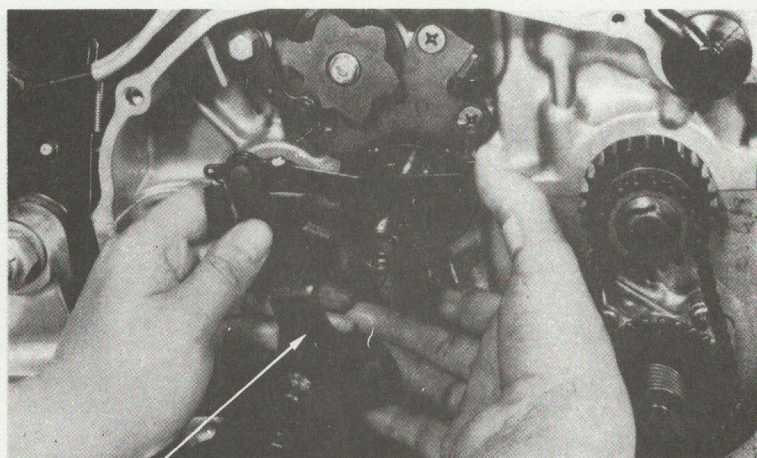


DRUM STOPPER ARM

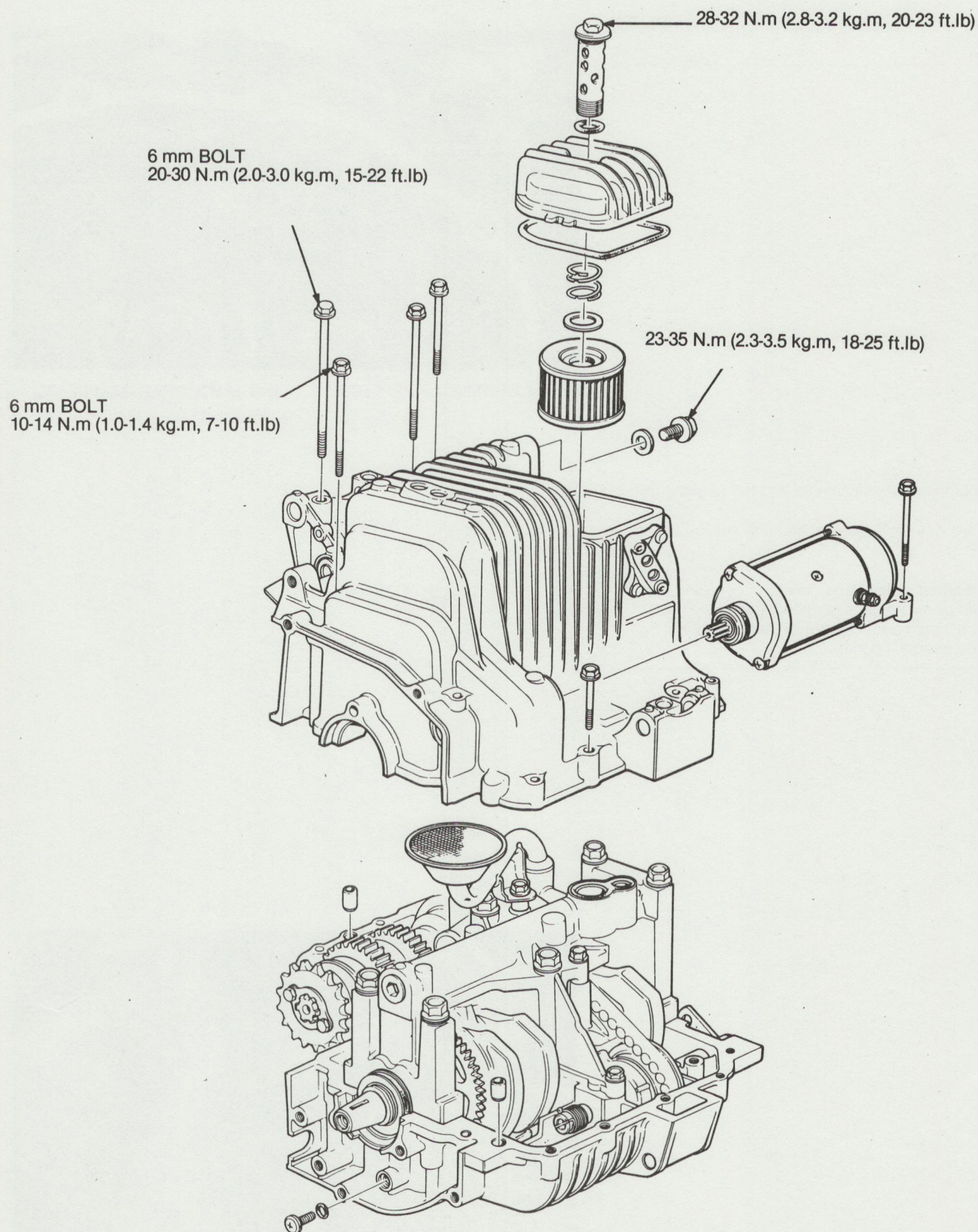
DRUM STOPPER CAM PLATE

Assemble the gearshift spindle and the gearshift return spring.
Install the gearshift spindle and the return spring as shown.

After installing check the linkage regarding smooth operation by rotating the gearshift spindle.
Install the clutch and the right crankcase cover.
Install the gearshift pedal.



GEARSHIFT SPINDLE



SERVICE INFORMATION	9—1
A.C. GENERATOR REMOVAL/INSTALLATION	9—2
CRANKCASE DISASSEMBLY	9—4
CRANKCASE ASSEMBLY	9—5

SERVICE INFORMATION

GENERAL INSTRUCTIONS

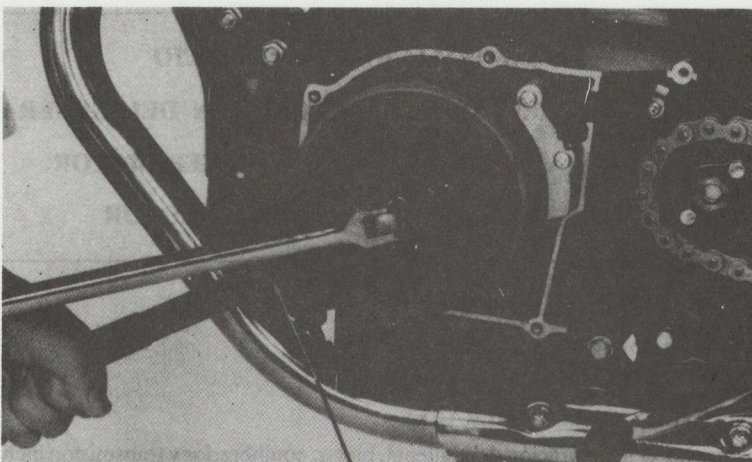
- To repair the crankshaft, connecting rods, balancer and transmission including the shift fork and drum, it is necessary to separate the crankcase halves.
- The engine must be removed from the frame and the following parts must be removed before disassembling the crankcase.
 - Cylinder head Section 6
 - Cylinders/pistons Section 7
 - Clutch Section 8
 - Oil pump Section 8
 - Gearshift linkage Section 8
 - AC Generator Section 19
 - Starter motor Section 17

TORQUE VALUES

6 mm bolt	10—14 N.m (1.0—1.4 kg.m, 7—10 ft.lb)
8 mm bolt	20—30 N.m (2.0—3.0 kg.m, 14—22 ft.lb)

A.C. GENERATOR REMOVAL/INSTALLATION**REMOVAL**

Remove the gearshift linkage.
Remove the left crankcase cover.
Remove the left side cover and disconnect the A.C. generator couplers.
Hold the A.C. generator rotor by means of a universal holder to loosen the rotor bolt.
Remove the rotor bolt.



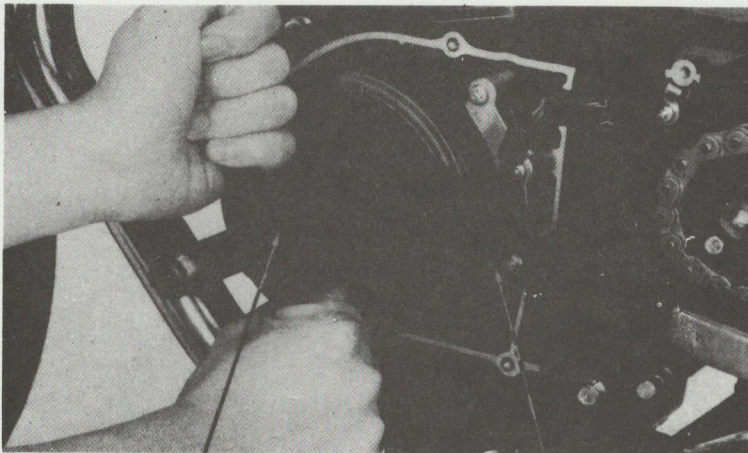
UNIVERSAL HOLDER

Remove the rotor.

CAUTION

Be careful not to damage the pickup on the outside of the rotor.

Quite el rotor.



ROTOR PULLER

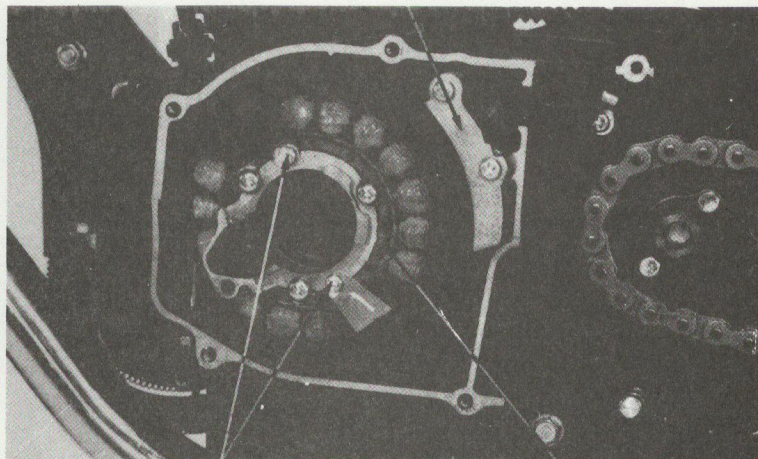
UNIVERSAL HOLDER

FIXED PULSER

Remove the stator and the fixed pulser.

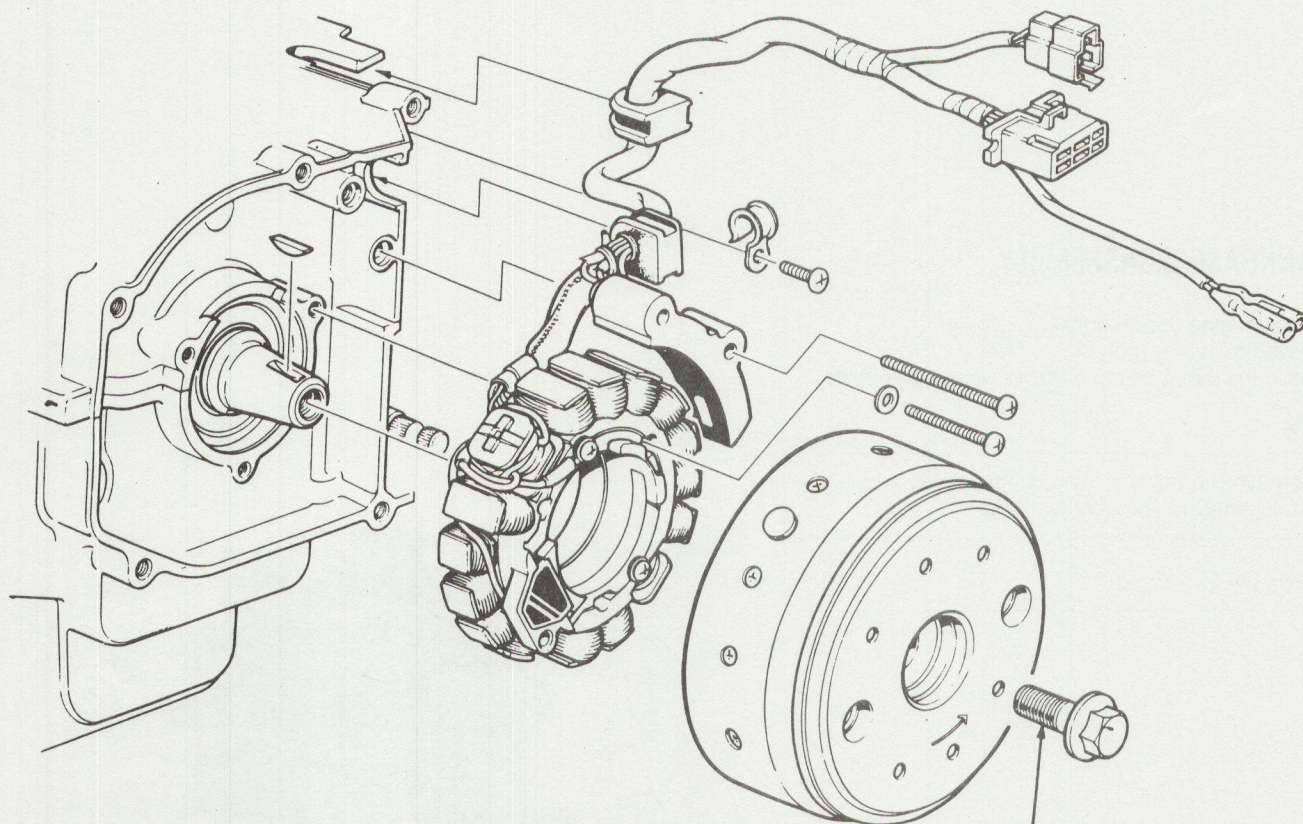
CAUTION

Never loosen the two painted screws at the stator to prevent the ignition timing from becoming out of time.



PAINTED SCREWS
(Never loosen)

STATOR



100-120 N.m (10.0-12.0 kg.m, 72-87 ft.lb)

A.C. GENERATOR / CRANKCASE

Install the stator and the fixed pulser.

NOTE

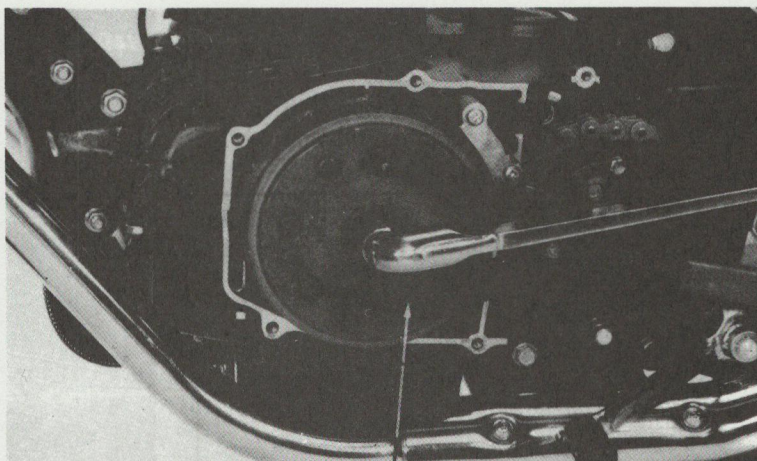
- Be sure the wires are routed properly.
- Check that the wires do not interfere with the A.C. generator rotor.

Connect the couplers and install the left side cover.
Install the A.C. generator rotor.

TORQUE:

100—120 N.m (10.0—12.0 kg.m, 72—87 ft.lb)

Install the left crankcase cover.



UNIVERSAL HOLDER

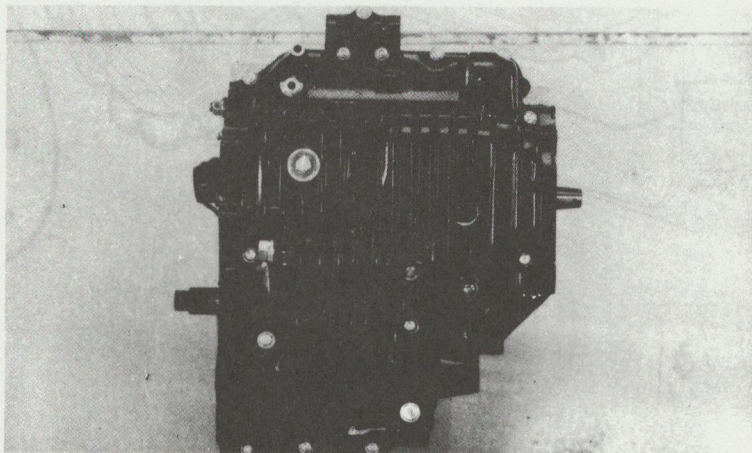
CRANKCASE DISASSEMBLY

Turn the engine upside down.
Remove the starter motor.
Remove the 8 mm bolt and the fourteen 6 mm bolts.

NOTE

Remove the bolts in two or more steps and in a cross pattern to prevent warpage.

Remove the lower case.

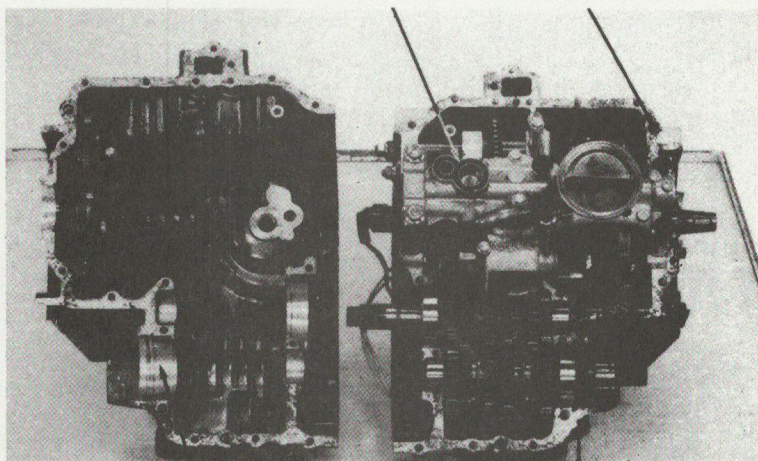


CRANKCASE ASSEMBLY

Before assembling, apply liquid sealant to the mating surfaces.

O-RING

DOWEL PIN



LOWER CASE

DOWEL PIN UPPER CASE

Install the lower case on the upper case and tighten the bolts according to the specified torques.

TORQUE SPECIFICATION:

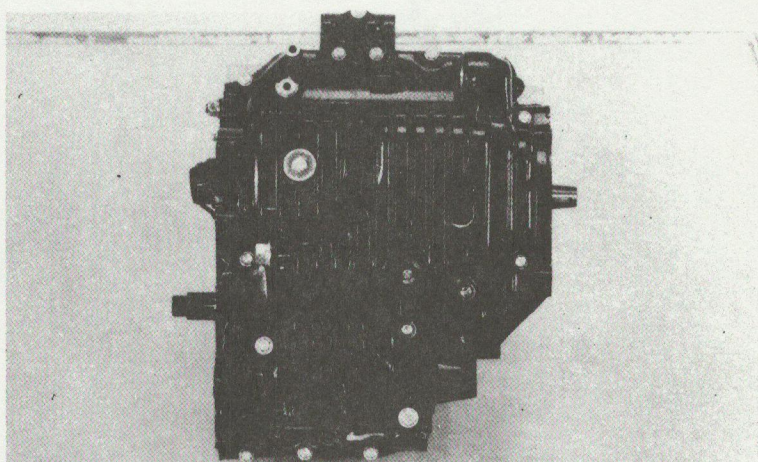
8 mm bolt: 20—30 N.m (2.0—3.0 kg.m, 15—22 ft.lb)

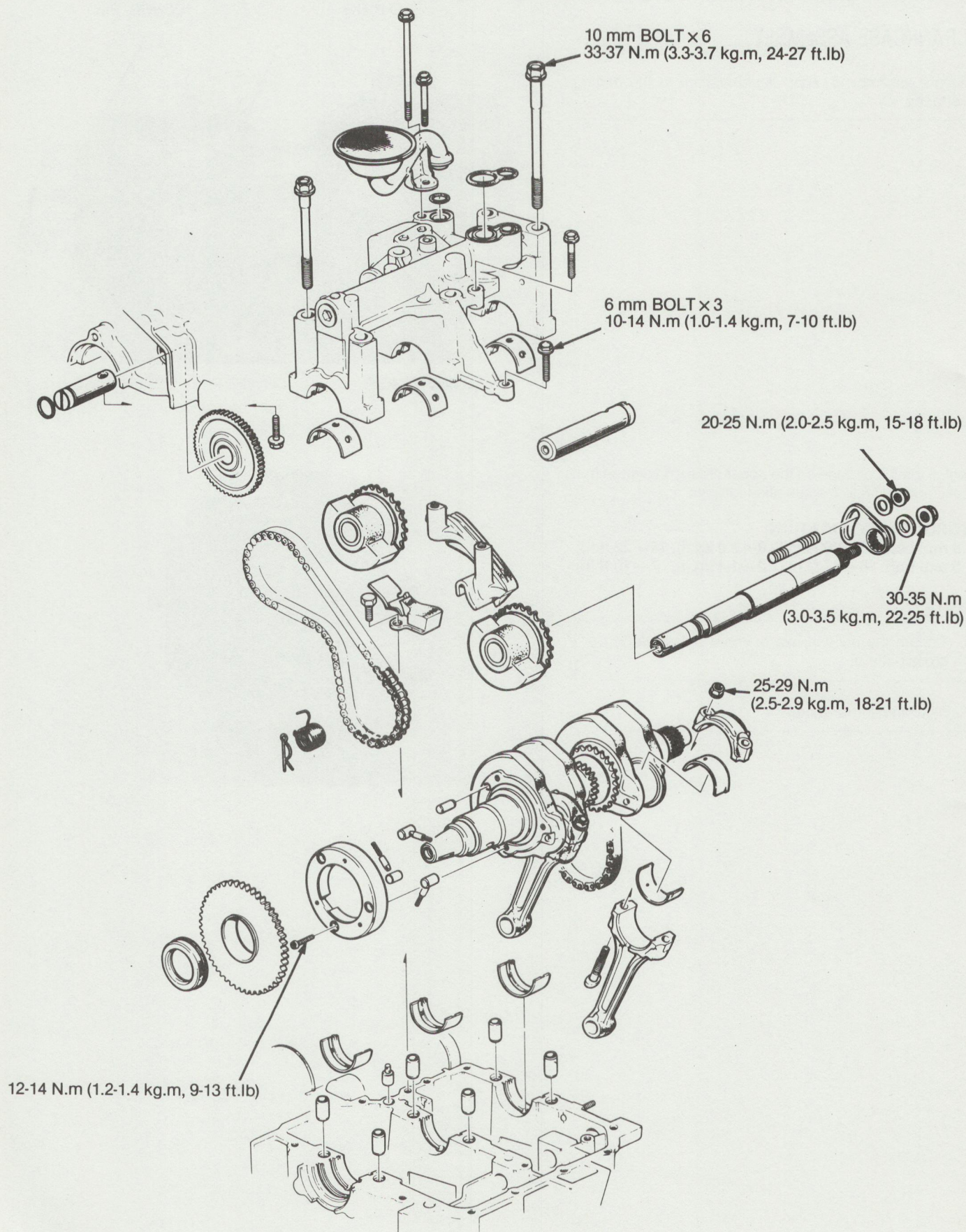
6 mm bolt: 10—14 N.m (1.0—1.4 kg.m, 7—10 ft.lb)

NOTE

Tighten the bolts in two or more steps and in a cross pattern.

Reinstall the starter motor.





SERVICE INFORMATION	10-1
TROUBLESHOOTING	10-2
BALANCER REMOVAL	10-3
CONNECTING ROD REMOVAL	10-6
CRANKSHAFT AND STARTER CLUTCH REMOVAL	10-7
ELECTRIC STARTER IDLE GEAR REMOVAL	10-8
BEARING INSPECTION	10-9
BEARING SELECTION	10-12
ELECTRIC STARTER IDLE GEAR INSTALLATION	10-16
ELECTRIC STARTER CLUTCH AND CRANKSHAFT INSTALLATION	10-16
CONNECTING ROD INSTALLATION	10-18
BALANCER INSTALLATION	10-19

SERVICE INFORMATION

• WORKING PRACTICE

All bearing inserts are a selective fit and are identified by color code. Select replacement bearings from the color code table.
After installing new bearings, recheck them using plastigauge to verify clearance.
After installing the balancer, check the timing and adjust balancer chain tension.
Apply molybdenum disulfide grease to the main journals and crankpins during assembly.

• SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Balancer	I.D.	18.010—18.028 mm (0.7090—0.7098 in)	18.04 mm (0.710 in)
	Shaft O.D.	17.966—17.984 mm (0.7073—0.7080 in)	17.95 mm (0.707 in)
	Balancer-to-shaft clearance	—	0.08 mm (0.003 in)
Crankshaft	Connecting rod big end side clearance	0.05—0.25 mm (0.002—0.010 in)	0.35 mm (0.014 in)
	Crankpin oil clearance	0.020—0.044 mm (0.0008—0.0017 in)	0.08 mm (0.003 in)
	Main journal oil clearance	0.020—0.044 mm (0.0008—0.0017 in)	0.08 mm (0.003 in)
	Runout	—	0.05 mm (0.002 in)
Electric starter gear	Drive gear O.D.	54.170—54.200 mm (2.1327—2.1339 in)	54.15 mm (2.132 in)
	Idle gear-to-shaft clearance	—	0.10 mm (0.004 in)

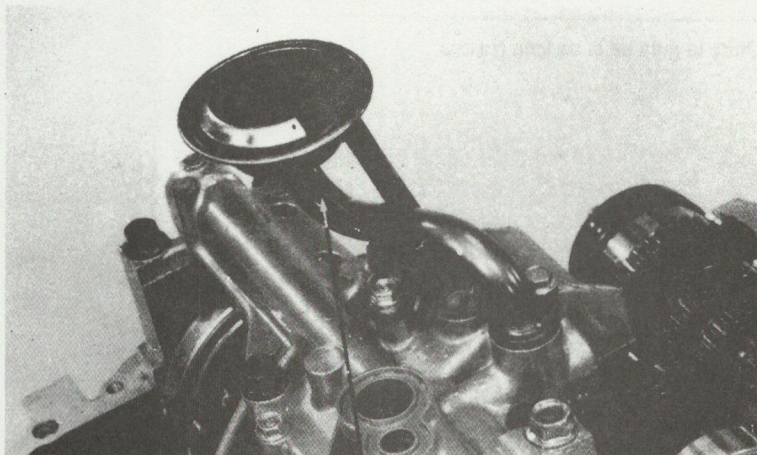
TROUBLESHOOTING

Excessive noise

1. Crankshaft
 - Worn main journal bearing
 - Worn crankpin bearing
2. Balancer
 - Improper timing adjustment
 - Improper chain adjustment
 - Damaged chain

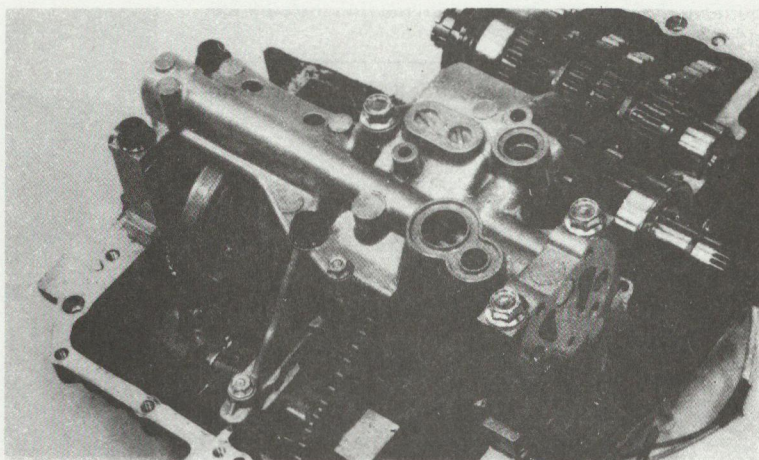
BALANCER REMOVAL

Split the crankcase (Section 9).
Remove the oil strainer.



OIL STRAINER

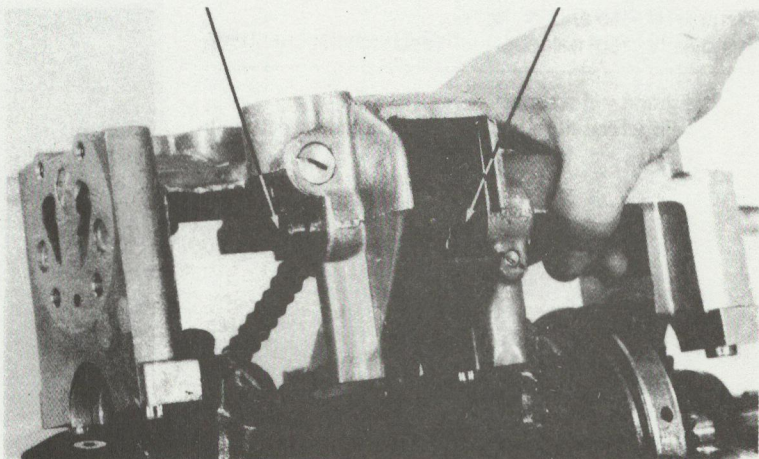
Remove the bearing holder bolts.



REAR BALANCER SHAFT

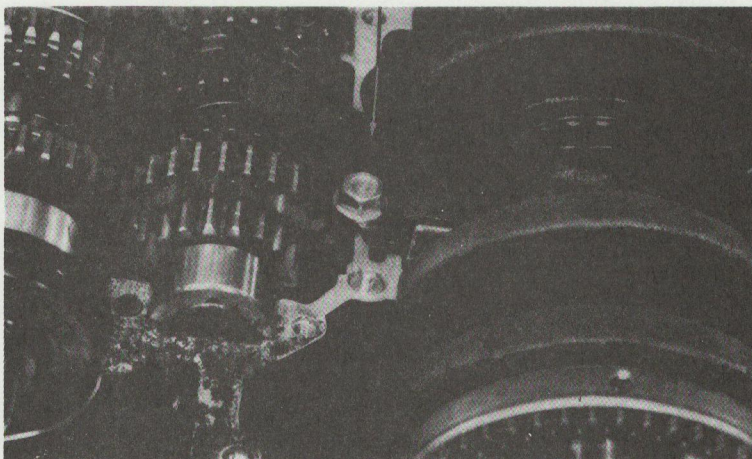
REAR BALANCER

Remove the front chain guide.
Remove the rear balancer shaft and the rear balancer.



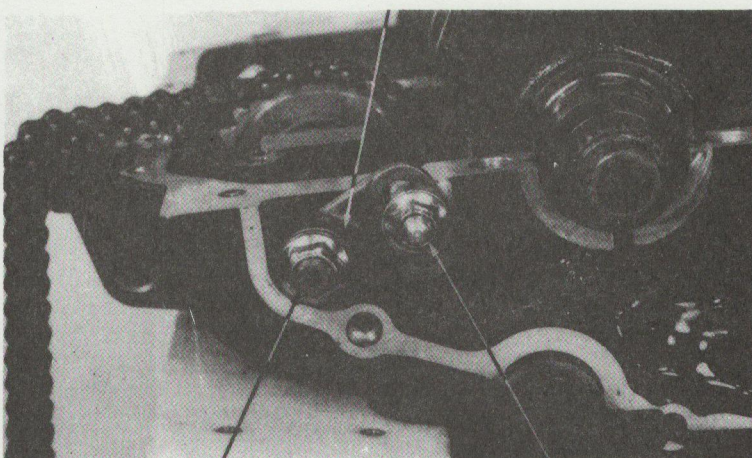
REAR CHAIN GUIDE

Remove the rear chain guide.



STOPPER PLATE

Remove the 10 mm nut, the 8 mm nut and the balancer stopper plate.



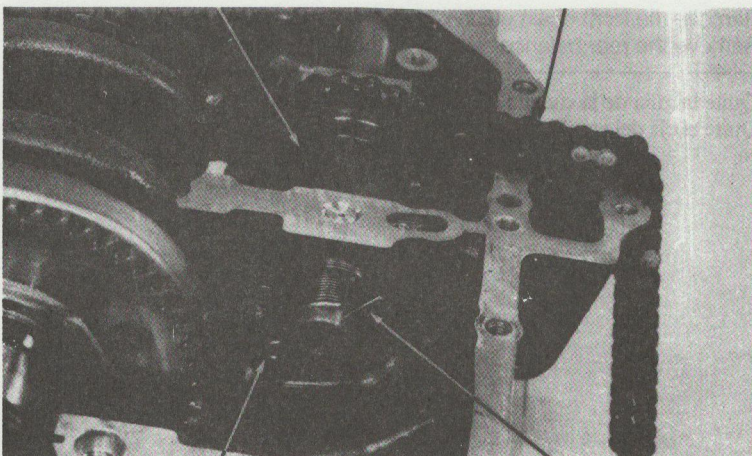
10 mm NUT

8 mm NUT

BALANCER

CHAIN

Remove the clip and the spring.
Remove the front balancer shaft and the balancer chain.



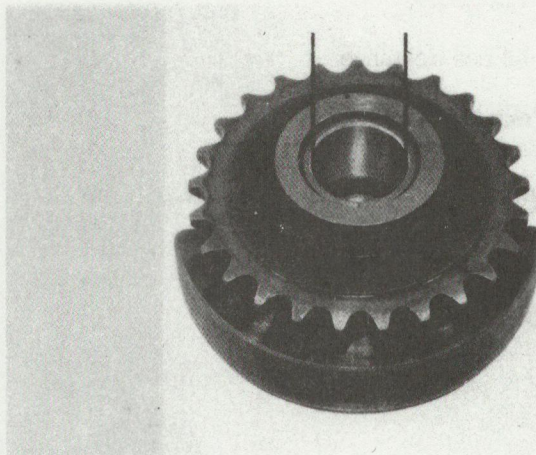
CLIP

SPRING

• BALANCER INSPECTION

Measure the balancer I.D..

SERVICE LIMIT: 18.04 mm (0.710 in)

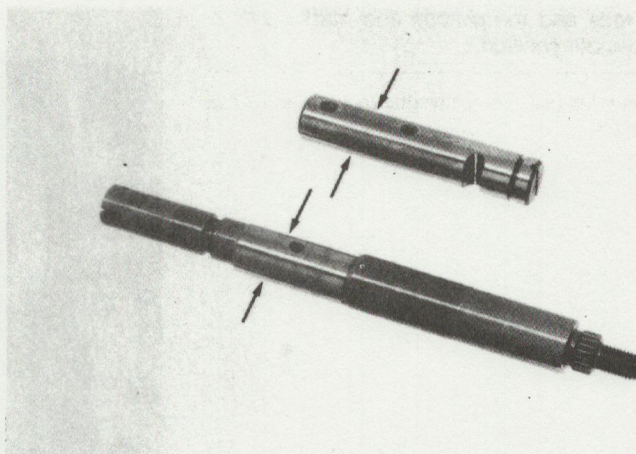


Measure the balancer shaft O.D..

SERVICE LIMIT: 17.95 mm (0.707 in)

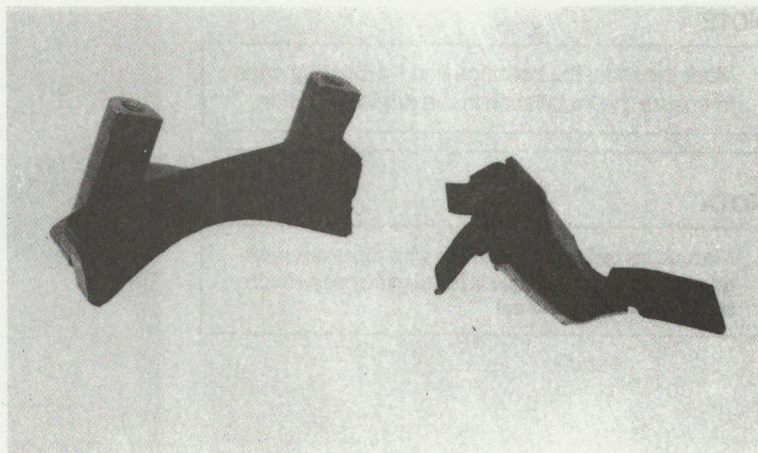
Measure the clearance between the balancer and the balancer shaft.

SERVICE LIMIT: 0.08 mm (0.003 in)



• CHAIN GUIDE INSPECTION

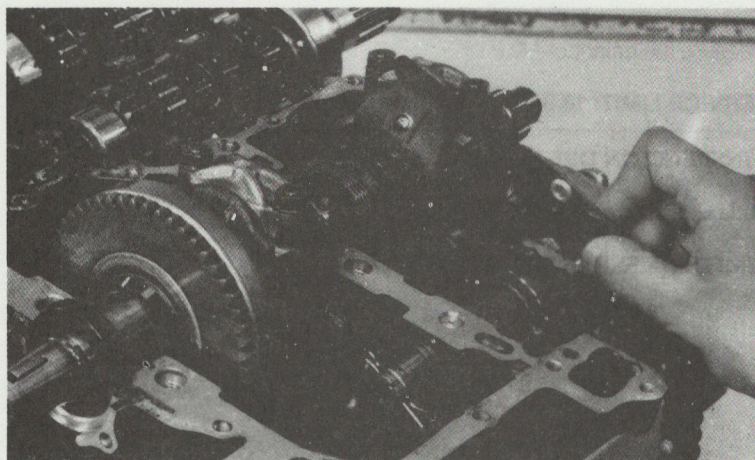
Check the front and rear chain guides regarding wear or damage.



CONNECTING ROD REMOVAL

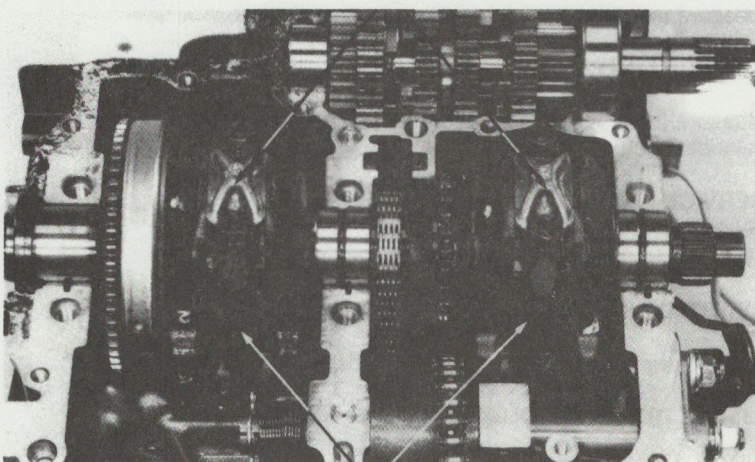
Check the connecting rod side clearance.

SERVICE LIMIT: 0.35 mm (0.014 in)



BEARING CAPS
TAPAS DEL COJINETE

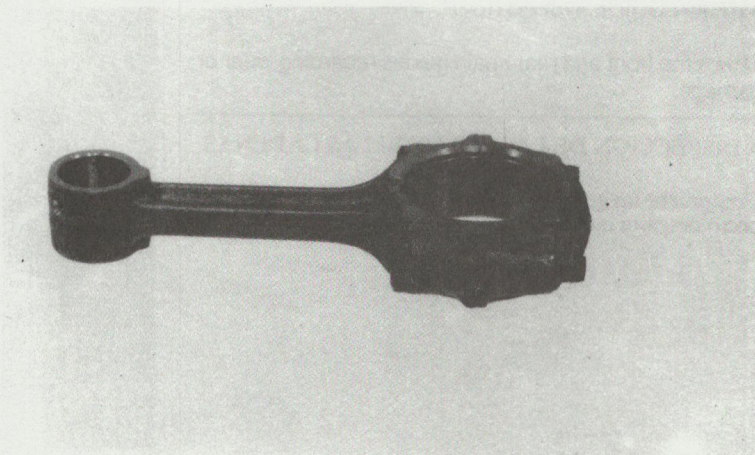
Remove the rods and the pistons and mark them to indicate the cylinder position.



CONNECTING ROD
BIELA

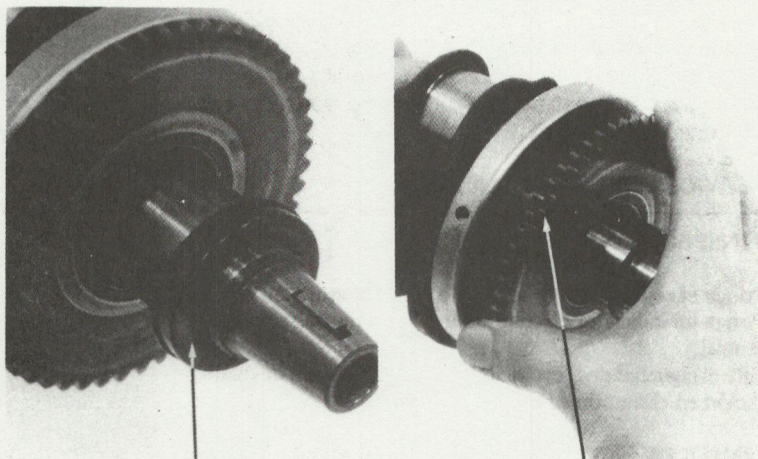
NOTE

Mark the rods, the bearings and the bearing caps to ensure the installation in the original position.



CRANKSHAFT AND STARTER CLUTCH REMOVAL

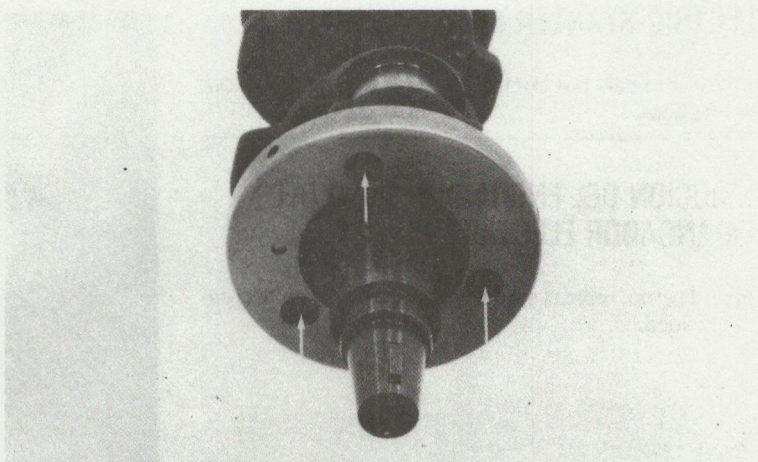
Remove the oil seal.
Remove the starter drive gear.



OIL SEAL

STARTER DRIVE GEAR

Remove the "torx" bolts.
Remove the starter clutch.



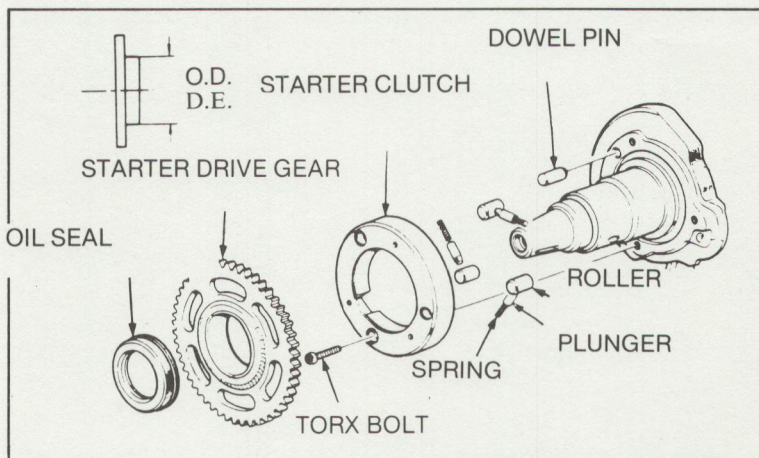
• STARTER CLUTCH INSPECTION

Inspect the roller regarding smooth rotation.
Remove the roller and check regarding excessive or local wear.

• STARTER DRIVE GEAR INSPECTION

Inspect the starter drive gear regarding damage or local or excessive wear.
Measure the starter drive gear O.D..

SERVICE LIMIT: 54.15 mm (2.132 in)

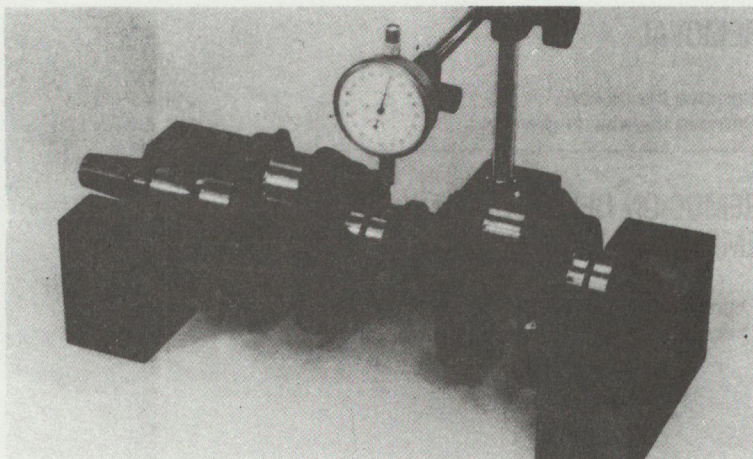


CRANKSHAFT / BALANCER

• CRANKSHAFT INSPECTION

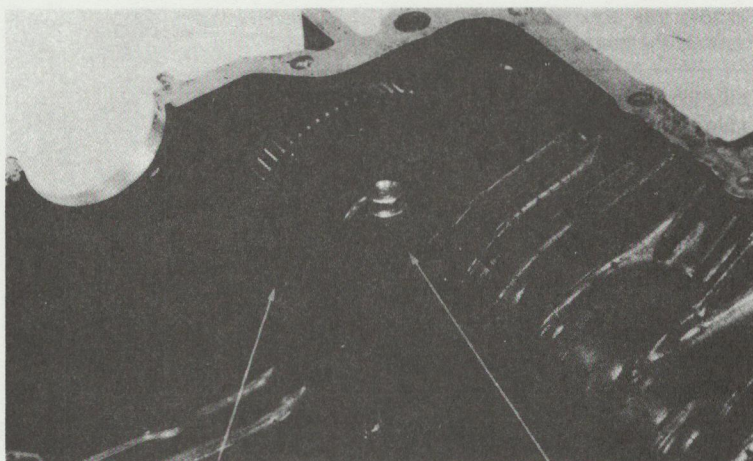
Set the crankshaft on a stand or V blocks.
Set a dial gauge on the center main journal.
Rotate the crankshaft two revolutions and read runout at the center journal.

SERVICE LIMIT: 0.05 mm (0.002 in)



ELECTRIC STARTER IDLE GEAR REMOVAL

Remove the bolt, pull out the idle gear shaft and take out the idle gear.



IDLE GEAR

IDLE GEAR SHAFT

- INSPECTION

Inspect the idle gear regarding tooth damage.
Measure the idle gear I.D..

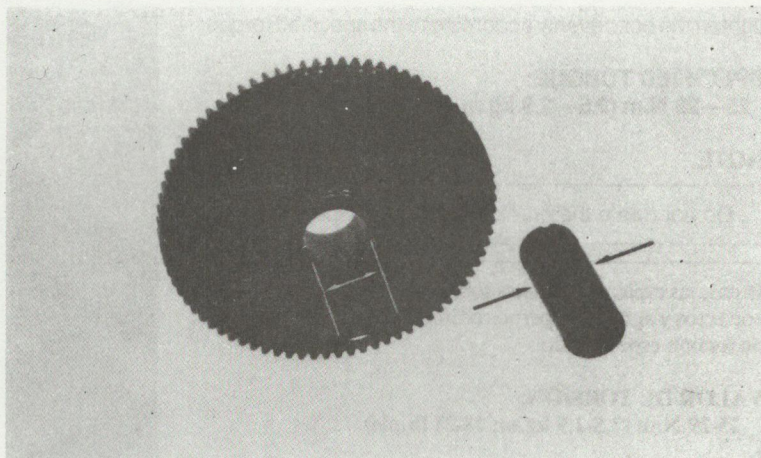
SERVICE LIMIT: 16.05 mm (0.632 in)

Measure the idle gear shaft O.D..

SERVICE LIMIT: 15.95 mm (0.628 in)

Measure the idle gear-to-shaft clearance.

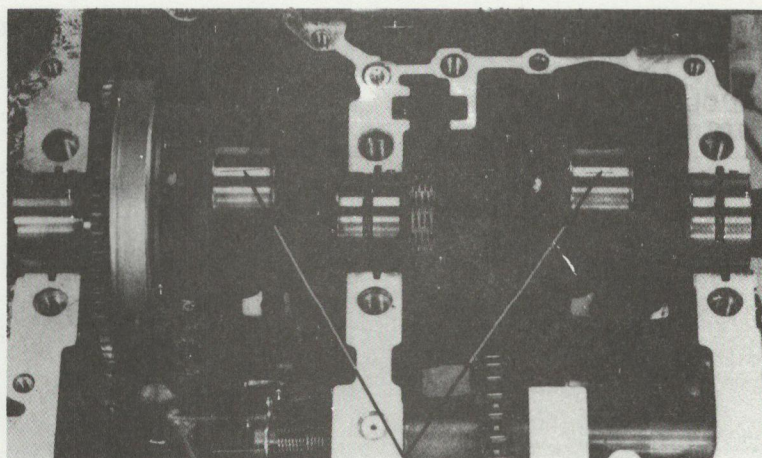
SERVICE LIMIT: 0.1 mm (0.004 in)



BEARING INSPECTION

- CONNECTING RODS

Inspect the bearing inserts regarding damage, separation or other defects.
Put a piece of platigauge on each crankpin, avoiding the oil hole.



PLASTIGAUGE

CRANKSHAFT / BALANCER

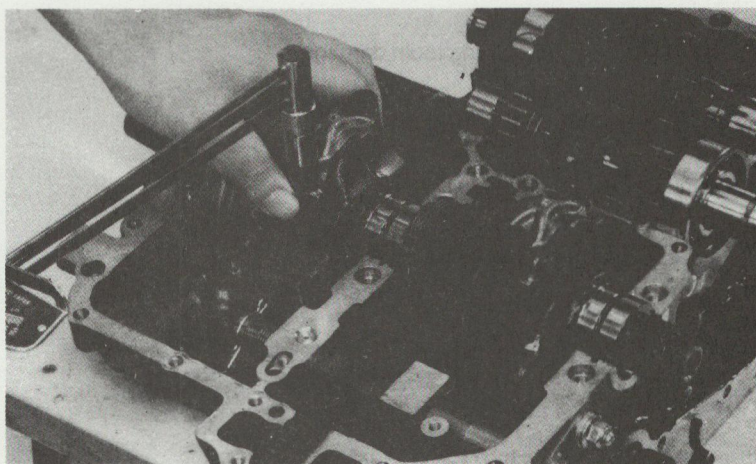
Install the bearing caps on the correct crankpins and tighten the bolts evenly according to the specified torque.

SPECIFIED TORQUE:

25—29 N.m (2.5—2.9 kg.m, 18—21 ft.lb)

NOTE

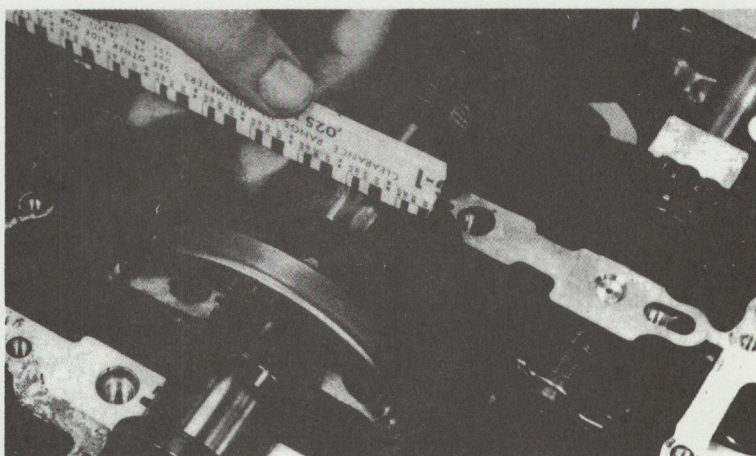
Do not rotate the crankshaft during inspection.



Remove the caps and measure the compressed plastigauge on each crankpin.

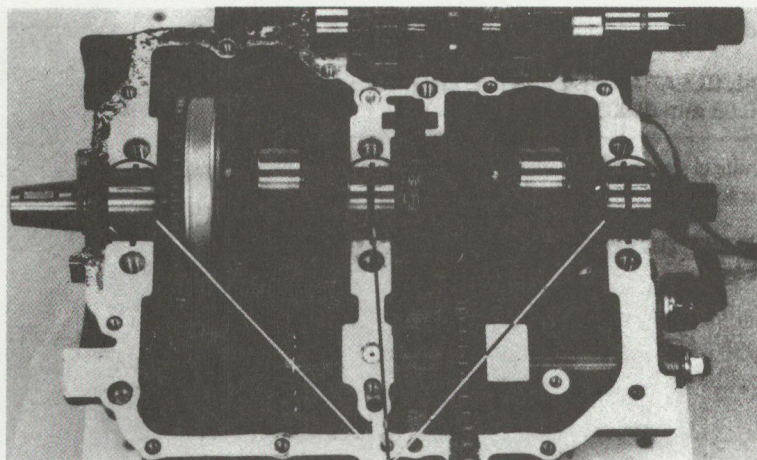
OIL CLEARANCE SERVICE LIMIT:

0.08 mm (0.003 in)



- MAIN BEARINGS

Inspect the bearing inserts regarding damage, separation or other defects.
Put a piece of plastigauge on each journal, avoiding the oil holes.



PLASTIGAUGE

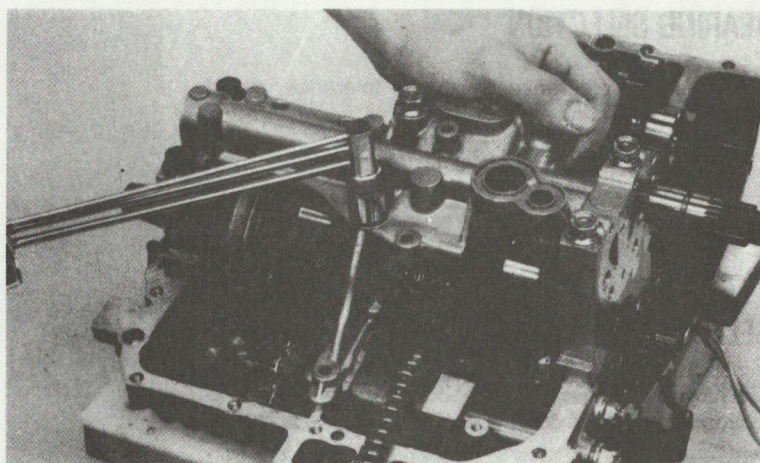
Install the crankshaft holder and tighten the bolts according to the specified torque in a cross pattern and in two or more steps.

SPECIFIED TORQUE:

33—37 N.m (3.3—3.7 kg.m, 24—27 ft.lb)

NOTE

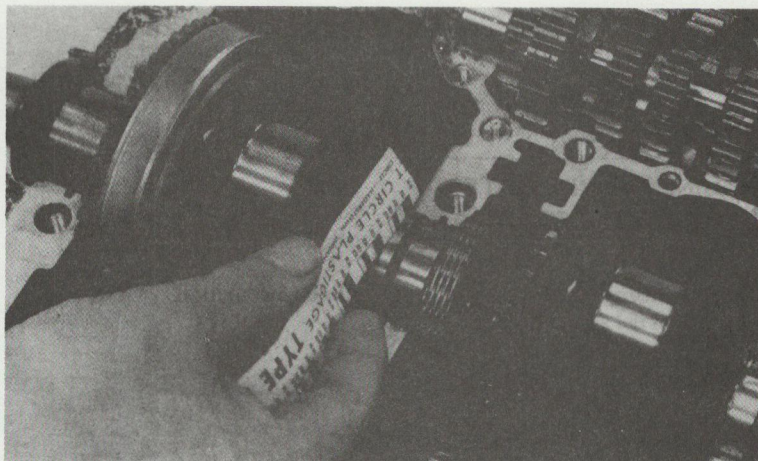
Do not rotate the crankshaft during inspection.



CRANKSHAFT / BALANCER

Remove the crankshaft holder and measure the compressed plastigauge on each journal.

OIL CLEARANCE SERVICE LIMIT:
0.08 mm (0.003 in)



BEARING SELECTION

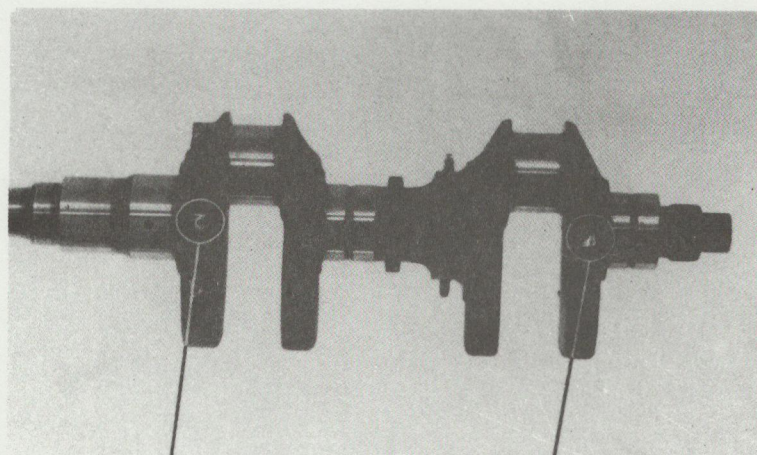
If rod bearing clearance is beyond tolerance, select replacement bearings as follows:

- CONNECTING ROD BEARING INSERTS

Determine and record the corresponding rod I.D. code number.



I.D. CODE NUMBER



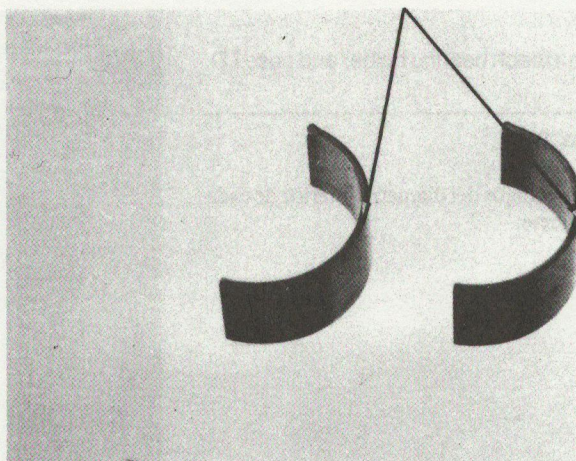
LEFT CRANKPIN CODE N°

RIGHT CRANKPIN CODE N°

COLOR CODE

Cross reference the crankpin and rod codes to determine the replacement bearing color.

		Crankpin O.D. code numbers			
		1	2	3	
		35.992 - 36.000 mm	35.984 - 35.992 mm	35.976 - 35.984 mm	
Connecting rod I.D. code numbers	1	39.000 - 39.008 mm	E (yellow)	D (green)	C (brown)
	2	39.008 - 39.016 mm	D (green)	C (brown)	B (black)
	3	39.016 - 39.024 mm	C (brown)	B (black)	A (blue)



BEARING INSERT THICKNESS:

A (BLUE) : 1.502—1.506 mm

B (BLACK) : 1.498—1.502 mm

C (BROWN) : 1.494—1.498 mm

D (GREEN) : 1.490—1.494 mm

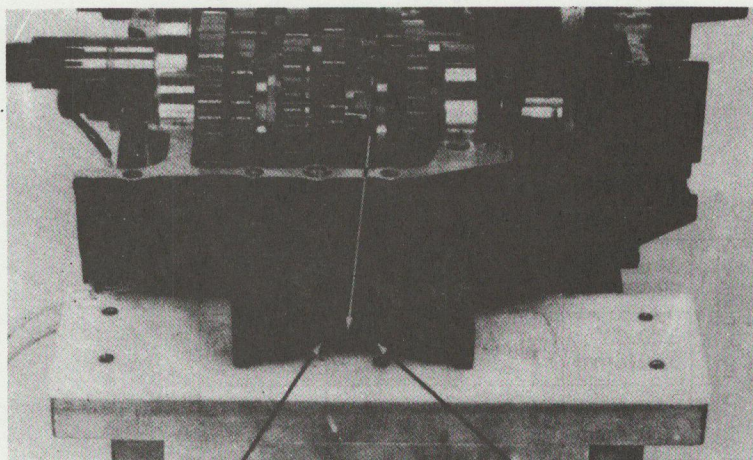
E (YELLOW) : 1.486—1.490 mm

CRANKSHAFT / BALANCER

• MAIN BEARING

Determine and record each bearing holder and case I.D. codes.

CENTER CASE I.D. CODE

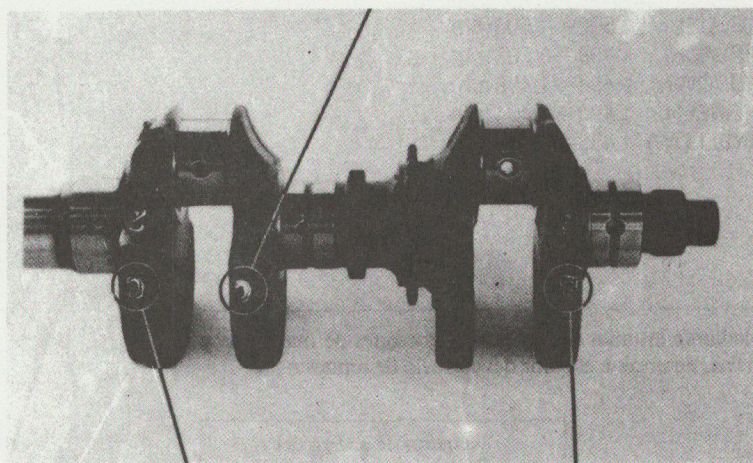


LEFT CASE I.D. CODE

RIGHT CASE I.D. CODE

CENTER MAIN JOURNAL CODE

Determine and record the corresponding main journal O.D. codes.



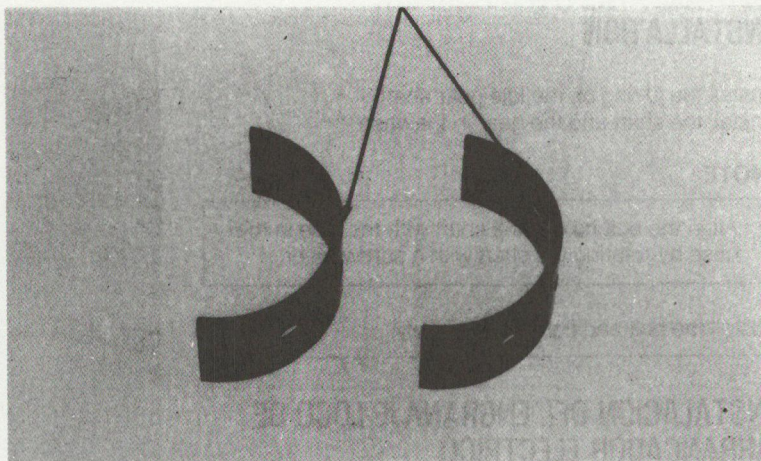
LEFT MAIN JOURNAL CODE

RIGHT MAIN JOURNAL CODE

COLOR CODE

Cross reference the case and journal codes to determine the replacement bearing color.

			Main journal O.D. codes		
			A	B	C
			35.992 - 36.000 mm	35.984 - 35.992 mm	35.976 - 35.984 mm
Case I.D. code	A	39.000 - 39.008 mm	E (yellow)	D (green)	C (brown)
	B	39.008 - 39.016 mm	D (green)	C (brown)	B (black)
	C	39.016 - 39.025 mm	C (brown)	B (black)	A (blue)



MAIN BEARING INSERT THICKNESS:

A (BLUE) : 1.502—1.506 mm

B (BLACK) : 1.498—1.502 mm

C (BROWN) : 1.494—1.498 mm

D (GREEN) : 1.490—1.494 mm

E (YELLOW) : 1.486—1.490 mm

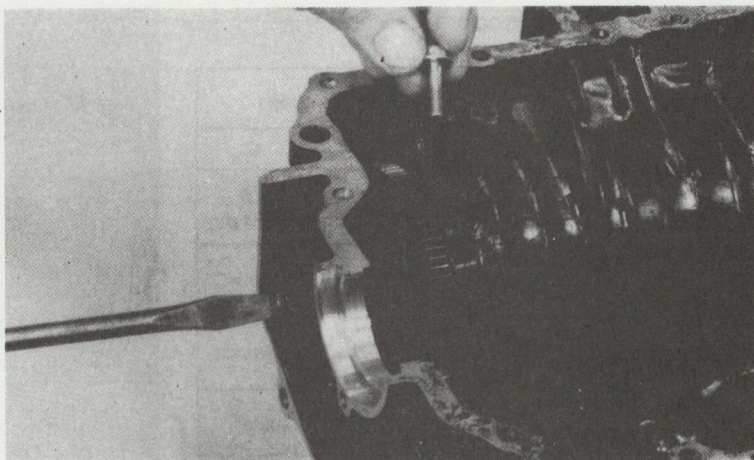
**ELECTRIC STARTER IDLE GEAR
INSTALLATION**

Install the O-ring on the idle gear shaft.
Install the shaft and the gear in the case.

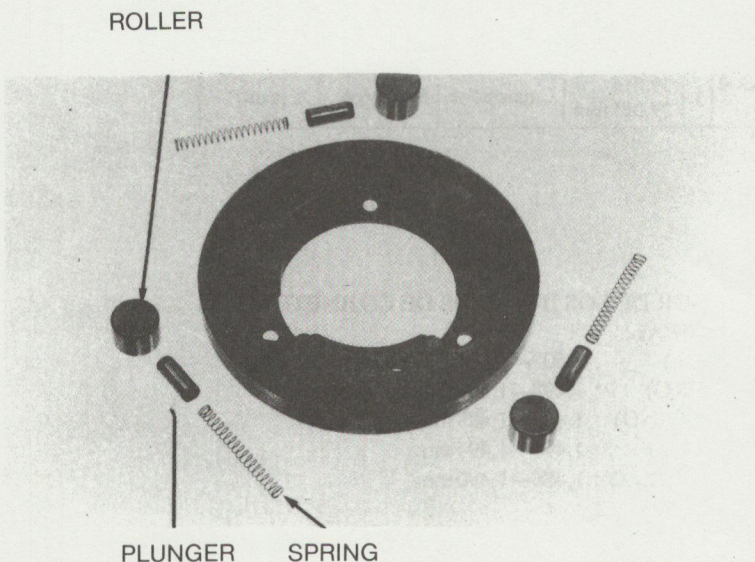
NOTE

Align the bolt hole in the shaft with the hole in the case by rotating the shaft with a screwdriver.

Install the bolt and tighten it securely.

**ELECTRIC STARTER CLUTCH AND
CRANKSHAFT INSTALLATION**

Install the springs, the plungers and the rollers.



Align the hole in the starter clutch with the dowel pin on the crankweight and install the starter clutch. Tighten the "torx" bolts.

TORQUE SPECIFICATION:

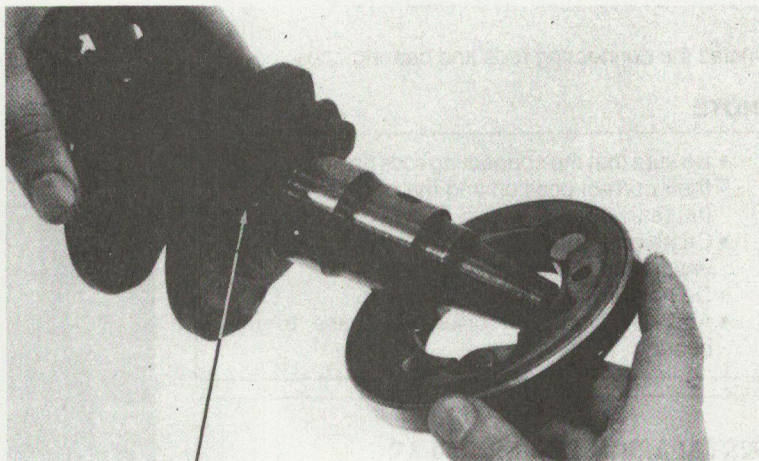
12—18 N.m (1.2—1.8 kg.m, 9—13 ft.lb)

SPECIAL TOOL

TORX DRIVER BIT 07703—0010200

NOTE

Apply a locking agent to the bolt threads.

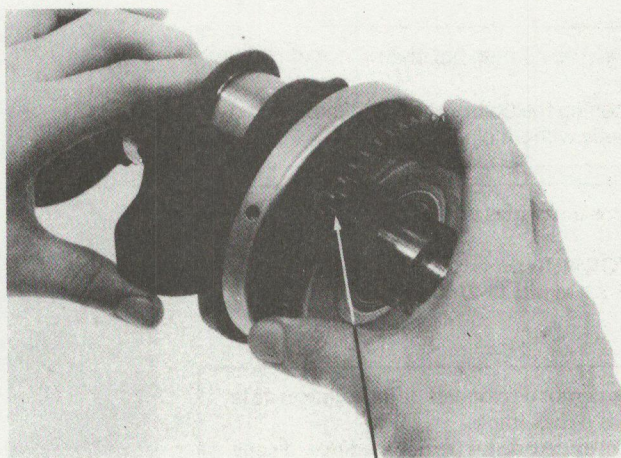


DOWEL PIN

Install the starter gear while rotating it by hand.
Install the oil seal on the crankshaft.
Install the cam chain on the crankshaft.
Lay the crankshaft in the crankcase.

NOTE

Lubricate each journal and crankpin with molybdenum disulfide grease.



STARTER GEAR

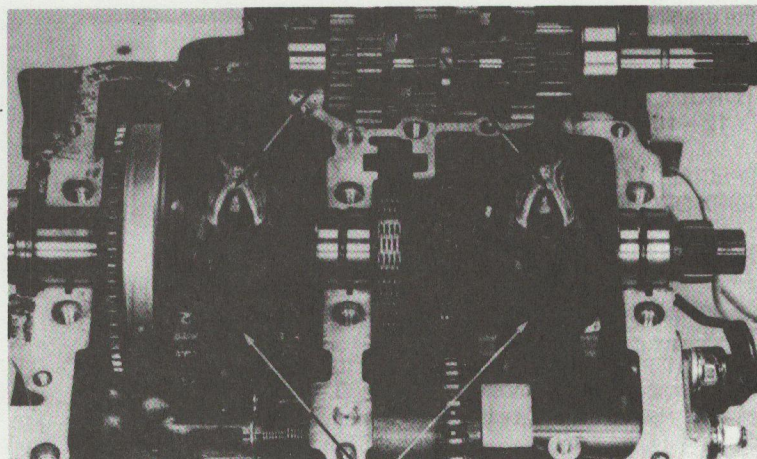
CONNECTING ROD INSTALLATION

Install the connecting rods and bearing caps.

NOTE

- Be sure that the connecting rods are installed in their correct position and the oil holes point to the rear.
- Cross reference the rod and cap I.D. codes to ensure the original assembly.
- Do not mix the right and left parts.
- Apply molybdenum disulfide grease to the bearing.

BEARING CAPS



CONNECTING RODS

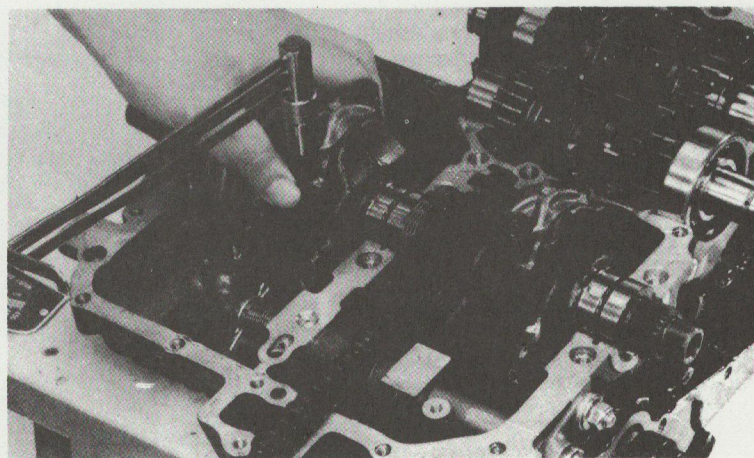
Tighten the connecting rod bearing cap bolts.

SPECIFIED TORQUE:

25—29 N.m (2.5—2.9 kg.m, 18—21 ft.lb)

NOTE

- Tighten the rod bearing cap bolts in two or more steps.
- After tightening the bolts, make sure that the rod moves freely without binding.

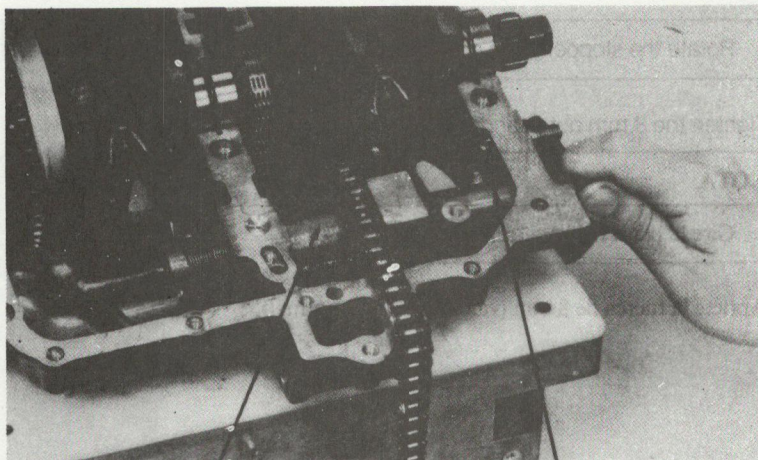


BALANCER INSTALLATION

Assemble the front balancer, the balancer chain and the front balancer shaft.

Position the punch mark on the end of the shaft at about 30 degrees above the horizontal line and install the spring.

Rotate the shaft clockwise 240 degrees in such a way that the reference mark is positioned in a vertical line.



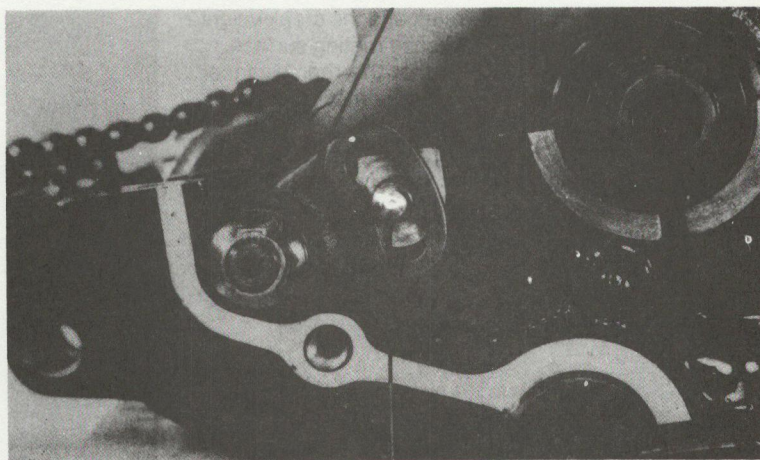
FRONT BALANCER

BALANCER SHAFT

STOPPER PLATE

Install the stopper plate with the stud bolt centered in the plate groove.

Temporarily tighten the 10 mm nut.

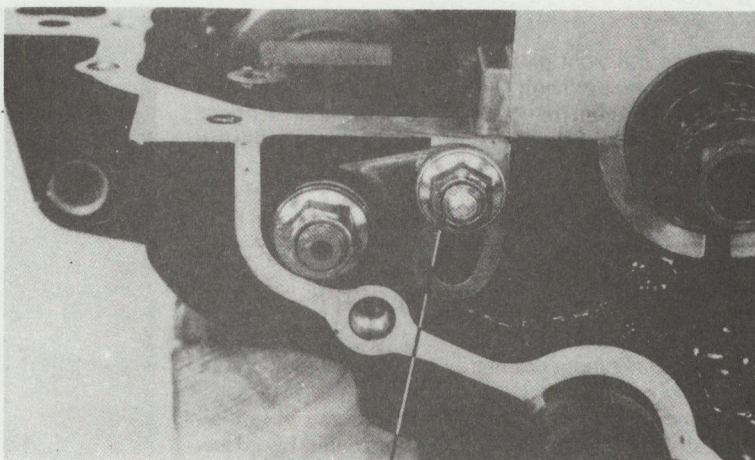


STUD BOLT

NOTE

Rotate the stopper plate clockwise fully.

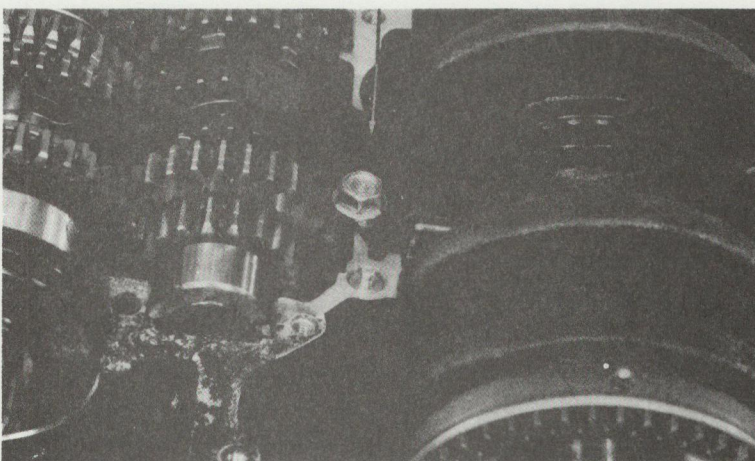
Tighten the 8 mm nut (standard torque value).



8 mm NUT

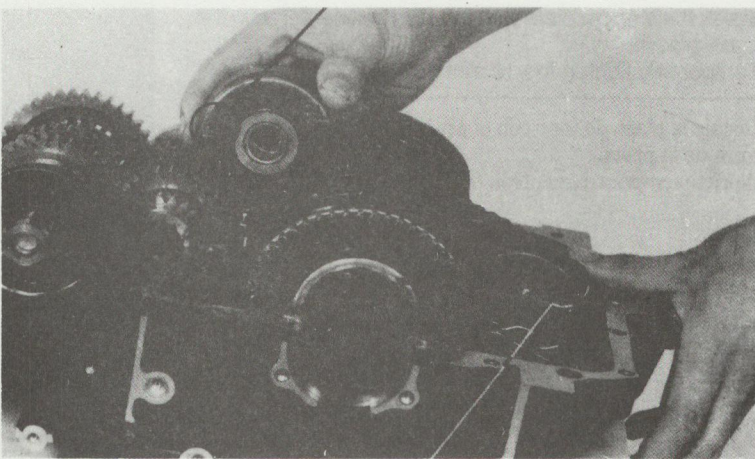
REAR CHAIN GUIDE

Install the rear chain guide.



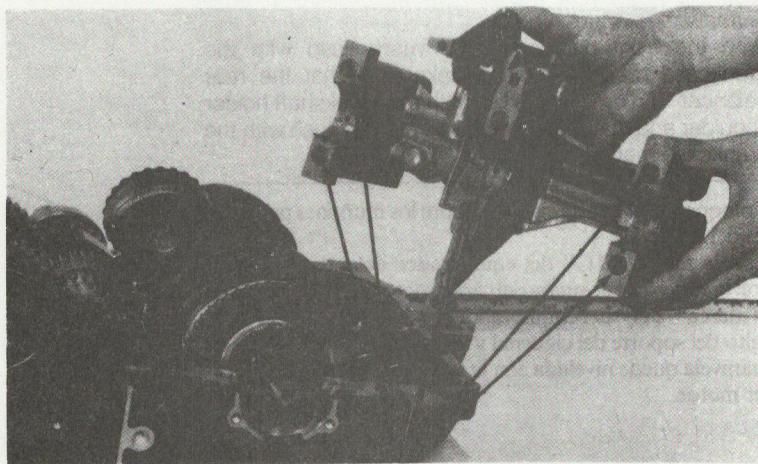
"TH" MARK

Align the front balancer "TC" mark and the crankweight aligning the mark with the crankcase mating surface.
Install the chain in such a way that the rear balancer "TH" mark is flush with the crankcase mating surface.



"TC" MARK

Be sure the dowel pins and bearing inserts are in place in the crankshaft holder.



DOWEL PINS

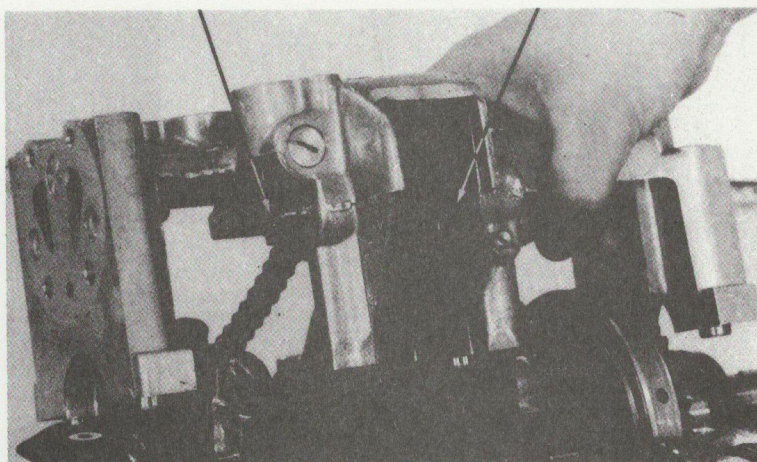
BALANCER SHAFT

REAR BALANCER

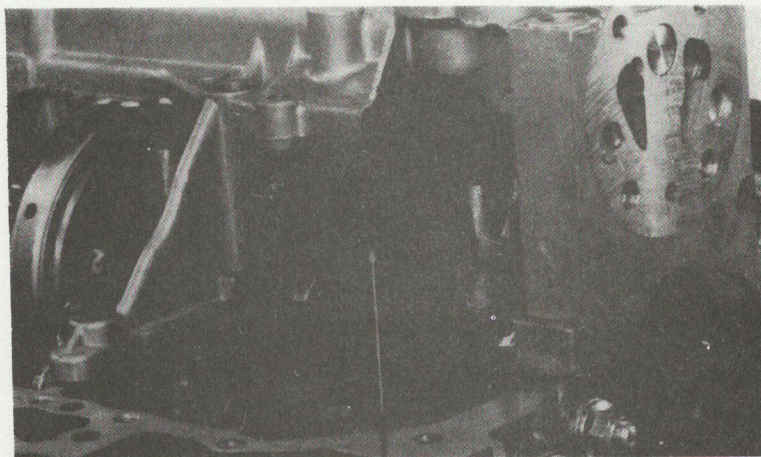
Install the rear balancer on the crankshaft holder with the shaft.

NOTE

Do not affect the position of the balancer chain on the sprocket during this operation.



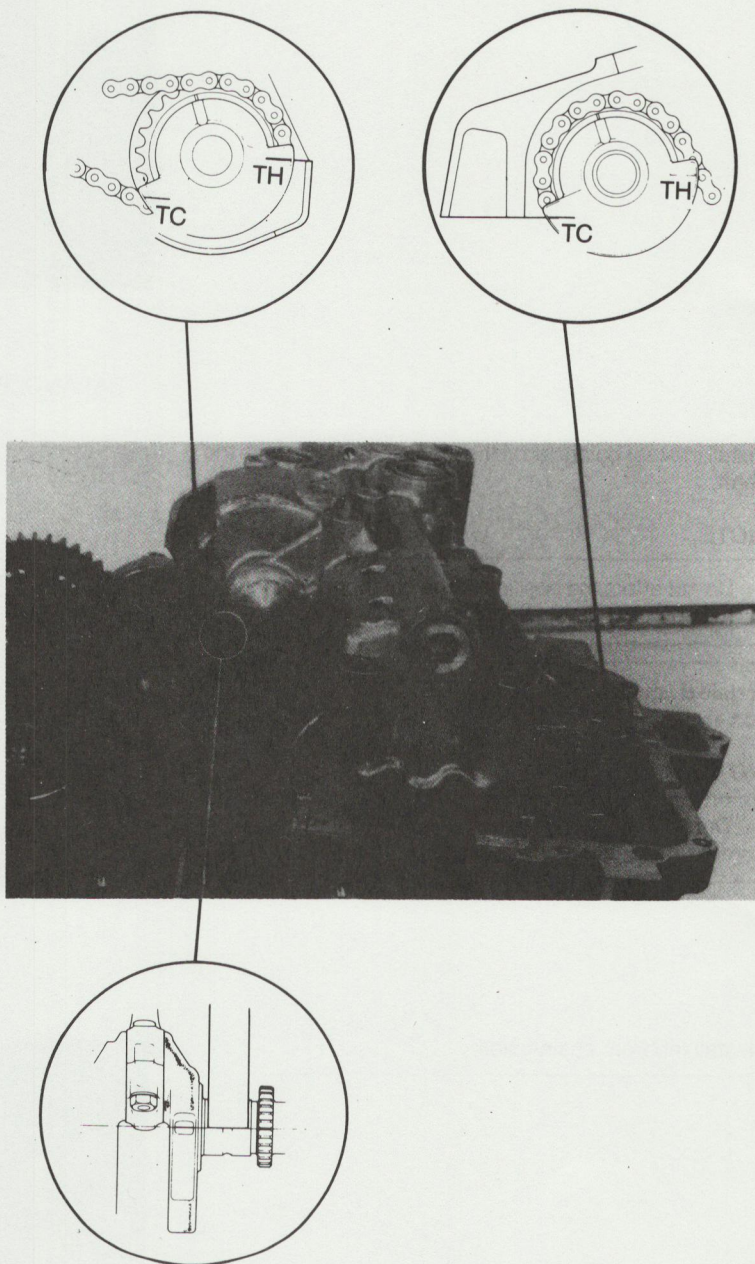
Install the front chain guide.



FRONT CHAIN GUIDE

Lay the crankshaft holder over the crankshaft main journals.

With the front balancer "TC" mark flush with the crankcase mating surface, make sure that the rear balancer "TH" mark is in line with the crankshaft holder shoulder and that the crankweight mark is flush with the crankcase mating surface.



Tighten the crankshaft holder bolts:

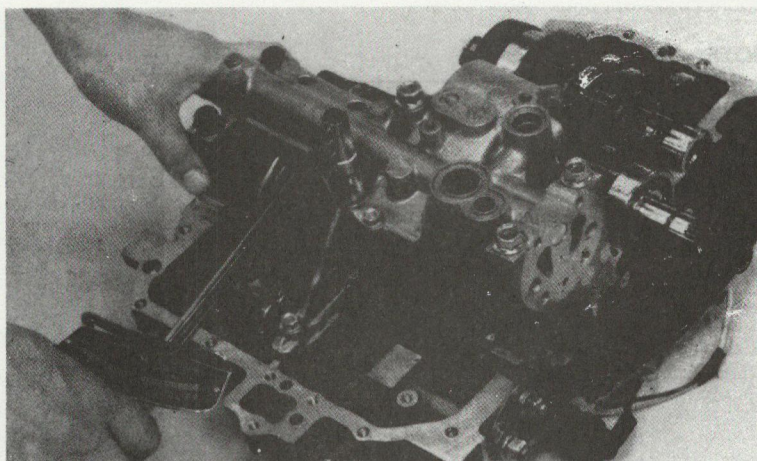
TORQUE SPECIFICATIONS:

10 mm bolt: 33—37 N.m (3.3—3.7 kg.m, 24—27 ft.lb)

6 mm bolt: 10—14 N.m (1.0—1.4 kg.m, 7—10 ft.lb)

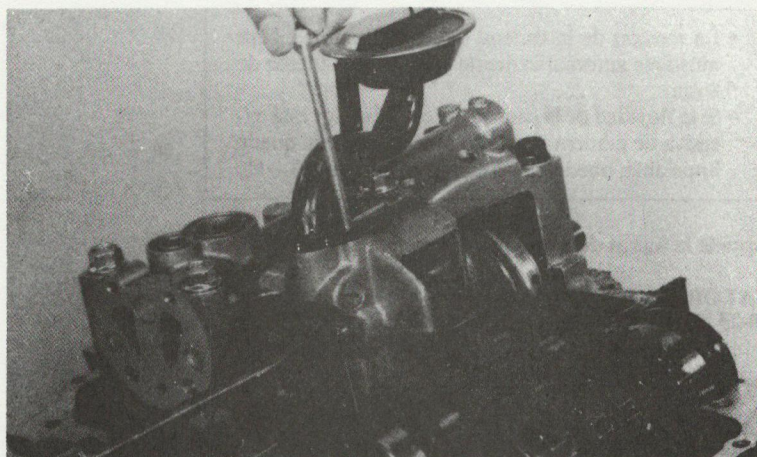
NOTE

- Tighten the holder bolts in two or more steps and in the cross pattern as shown.
- Make sure that the crankshaft rotates freely without binding.



Slide the O-ring over the oil strainer pipe. align the slit of the rear balancer shaft with the bolt hole of the crankshaft holder to install the oil strainer attaching bolt.

OIL STRAINER

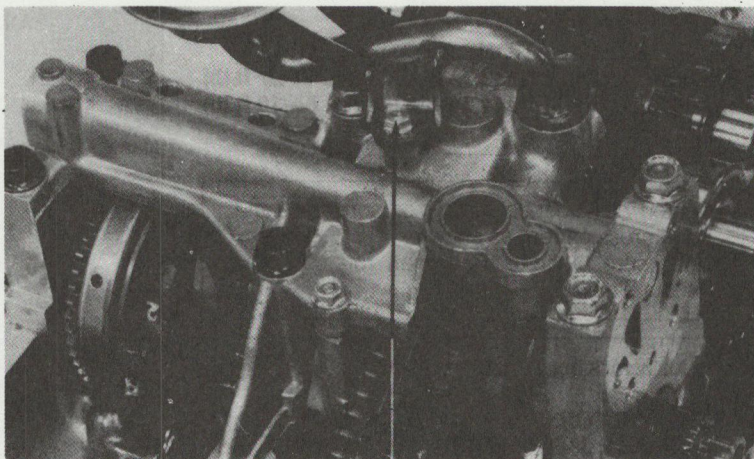


BALANCER SHAFT

Tighten the front chain guide bolts.

NOTE

The 6 mm bolts should be tightened with the oil strainer installed.



6 mm CHAIN GUIDE BOLTS

Loosen the 8 mm nut.

NOTE

- The balancer chain tension will be adjusted automatically by loosening the 8 mm nut.
- If the balancer chain slack is excessive in such a way that no further adjustment is possible, follow the steps on page 3-11.

Tighten the 8 mm nut first.

TORQUE SPECIFICATION:

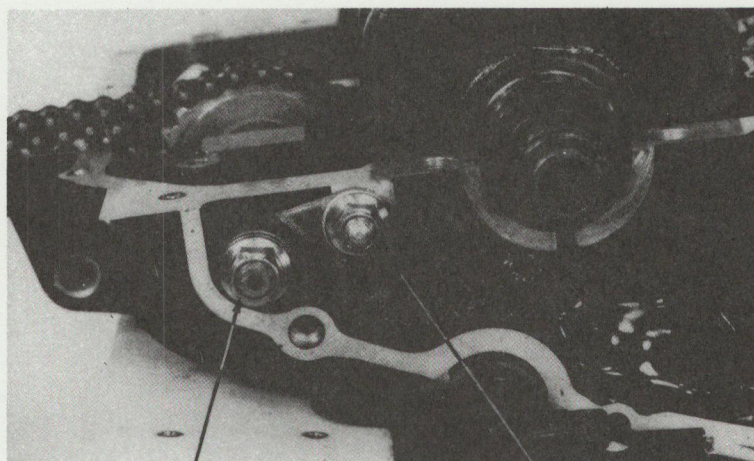
20—25 N.m (2.0—2.5 kg.m, 15—18 ft.lb)

Tighten the 10 mm nut last.

TORQUE SPECIFICATION:

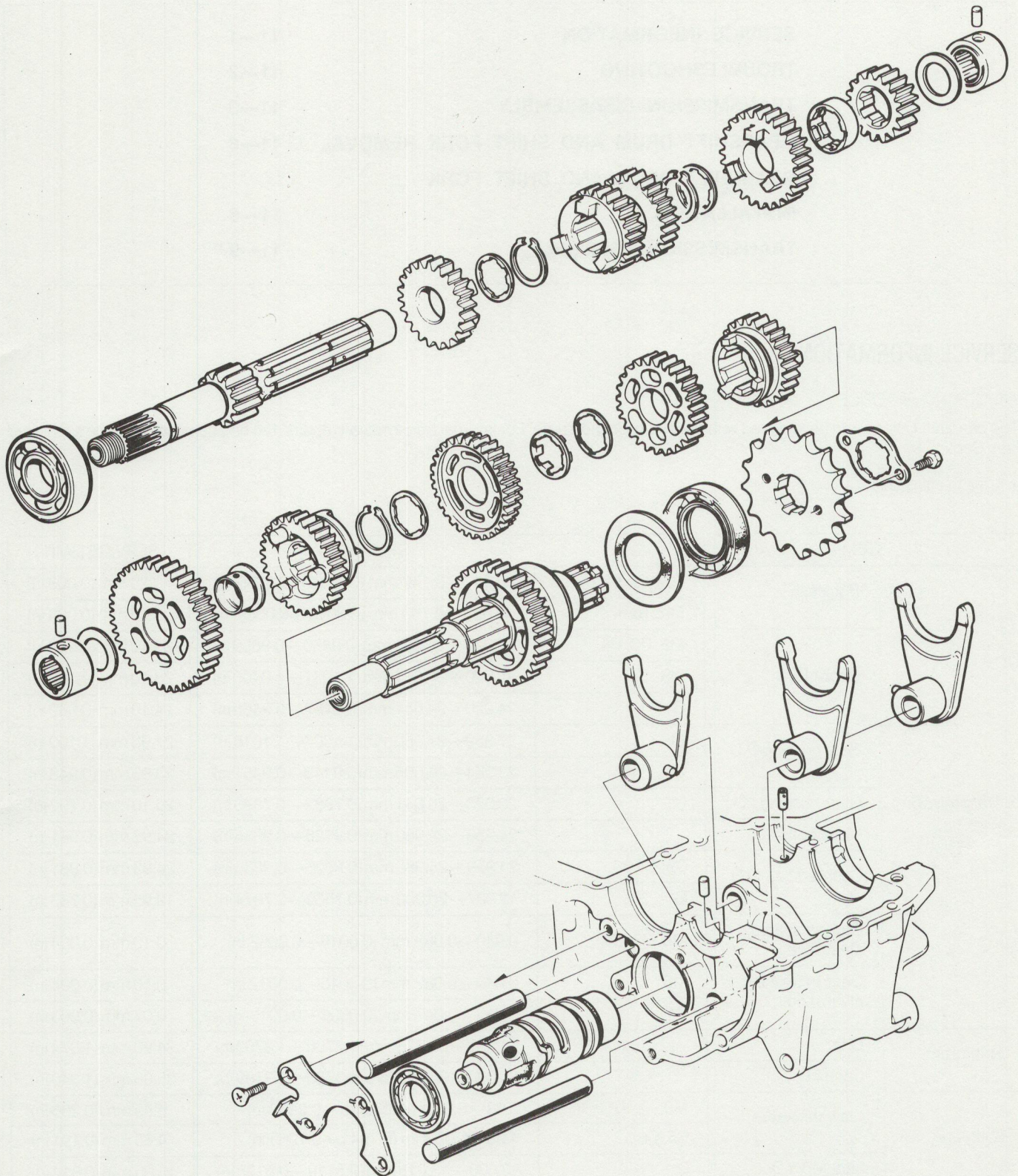
30—35 N.m (3.0—3.5 kg.m, 22—25 ft.lb)

Install the lower case (Section 9).



10 mm NUT

8 mm NUT



11. TRANSMISSION

HONDA®
CB450N

SERVICE INFORMATION	11-1
TROUBLESHOOTING	11-2
TRANSMISSION DISASSEMBLY	11-3
GEARSHIFT DRUM AND SHIFT FORK REMOVAL	11-6
GEARSHIFT DRUM AND SHIFT FORK INSTALLATION	11-8
TRANSMISSION ASSEMBLY	11-9

SERVICE INFORMATION

• WORKING PRACTICE

The gearshift linkage can be serviced with the engine in the frame. For internal transmission repairs, the engine cases must be separated (see Section 9).

• SPECIFICATIONS

ITEM		STANDARD		SERVICE LIMIT
Transmission	Backlash	Low, 2nd, 3rd, 4th	0.047—0.142 mm (0.0019—0.0056 in)	0.20 mm (0.008 in)
		5th, Top	0.050—0.150 mm (0.0019—0.0059 in)	0.20 mm (0.008 in)
	Gear I.D.	M5, C3, C4	25.020—25.041 mm (0.9850—0.9859 in)	25.10 mm (0.988 in)
		M6	28.020—28.041 mm (1.1031—1.0400 in)	28.10 mm (1.106 in)
		C1	24.020—24.041 mm (0.9457—0.9465 in)	24.10 mm (0.949 in)
	Gear bushing O.D.	M6	27.959—27.980 mm (1.1007—1.1016 in)	27.93 mm (1.100 in)
		C1	23.984—24.005 mm (0.9443—0.9451 in)	23.95 mm (0.943 in)
	Gear bushing I.D.	C1	20.020—20.041 mm (0.7882—0.7890 in)	20.10 mm (0.792 in)
	Mainshaft O.D.		24.959—24.980 mm (0.9826—0.9835 in)	24.93 mm (0.981 in)
	Countershaft O.D.	C3, C4	24.959—24.980 mm (0.9826—0.9835 in)	24.93 mm (0.981 in)
		C1	19.987—20.000 mm (0.7869—0.7874 in)	19.95 mm (0.785 in)
	Gear to shaft clearance	M5, C3, C4	0.040—0.082 mm (0.0016—0.0032 in)	0.10 mm (0.004 in)
	Gear to bushing clearance	M6	0.040—0.082 mm (0.0016—0.0032 in)	0.10 mm (0.004 in)
		C1	0.015—0.047 mm (0.0006—0.0019 in)	0.07 mm (0.003 in)
Shift drum	O.D.		34.950—34.975 mm (1.3760—1.3763 in)	34.90 mm (1.374 in)
	Case I.D.		35.000—35.025 mm (1.3780—1.3789 in)	35.05 mm (1.340 in)
Shift fork	Claw thickness	M3	5.93—6.00 mm (0.2335—0.2362 in)	5.85 mm (0.230 in)
		C5, C6	4.93—5.00 mm (0.1941—0.1969 in)	4.85 mm (0.191 in)
	Shift fork I.D.		13.000—13.018 mm (0.5119—0.5125 in)	13.05 mm (0.514 in)
Fork shaft	O.D.		12.966—12.984 mm (0.5105—0.5112 in)	12.95 mm (0.510 in)

TROUBLESHOOTING

Hard to shift

1. Improper clutch adjustment: too much free play
2. Bent shift forks
3. Bent shift shaft
4. Bent shift fork claw
5. Damaged shift drum cam grooves

Transmission jumps out of gear

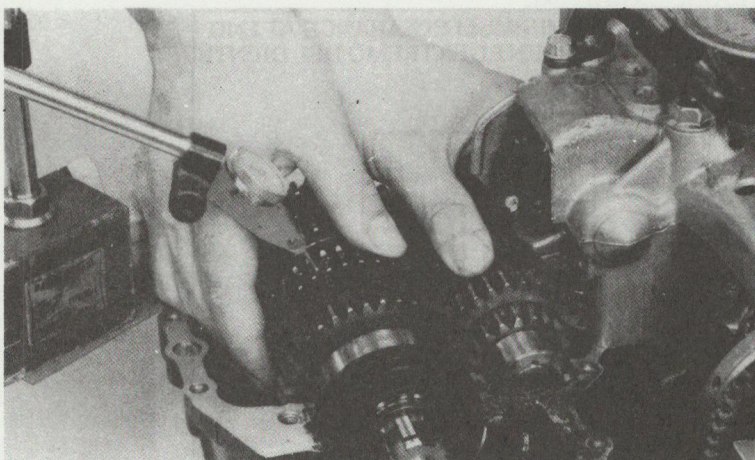
1. Worn gear teeth
 2. Bent shift shaft
 3. Broken shift drum stopper
 4. Bent shift forks.
-

TRANSMISSION DISASSEMBLY

Separate the crankcases (Section 9).
Inspect each gear regarding backlash.

SERVICE LIMIT: 0.20 mm (0.008 in)

Remove the crankshaft holder.

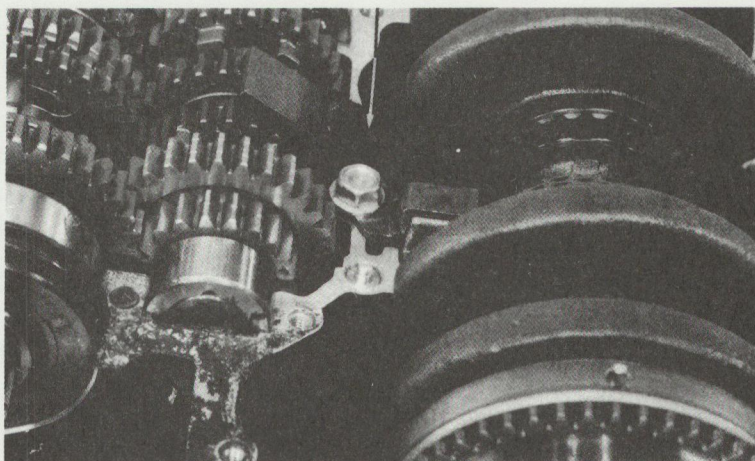


BALANCER CHAIN GUIDE

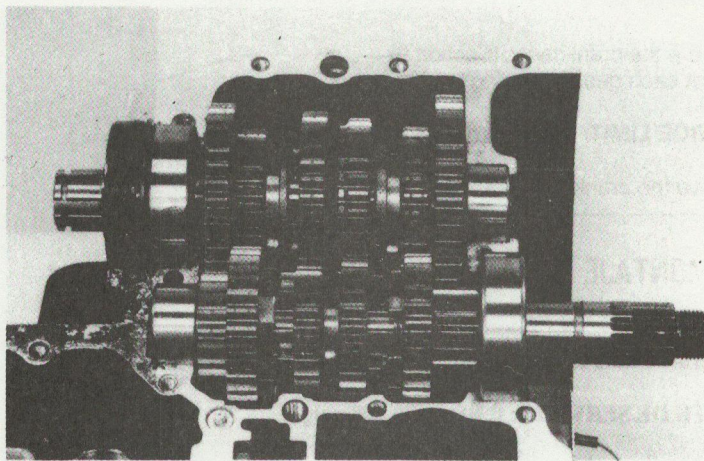
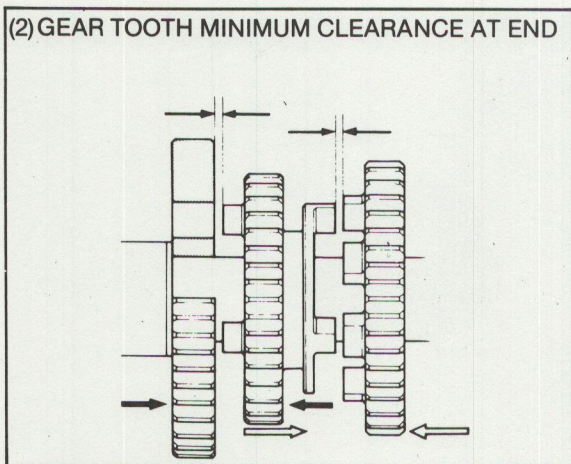
Remove the rear balancer chain guide.
Place the gears into neutral and check each gear tooth
for minimum clearance at end.

SERVICE LIMIT: 0.30 mm (0.012 in)

Remove the main shaft and the countershaft.
Lift out the oil valve and the dowel pin.



(2) GEAR TOOTH MINIMUM CLEARANCE AT END



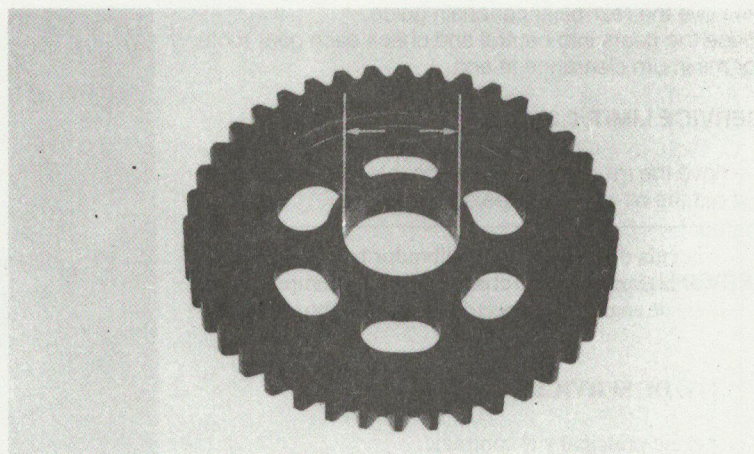
• TRANSMISSION INSPECTION

Check the gear teeth regarding excessive or abnormal wear.

Inspect the I.D. of each gear.

SERVICE LIMIT:

M5, C3 and C4 gears:	25.10 mm (0.988 in)
M6 gear	: 28.10 mm (1.106 in)
C1 gear	: 24.10 mm (0.949 in)



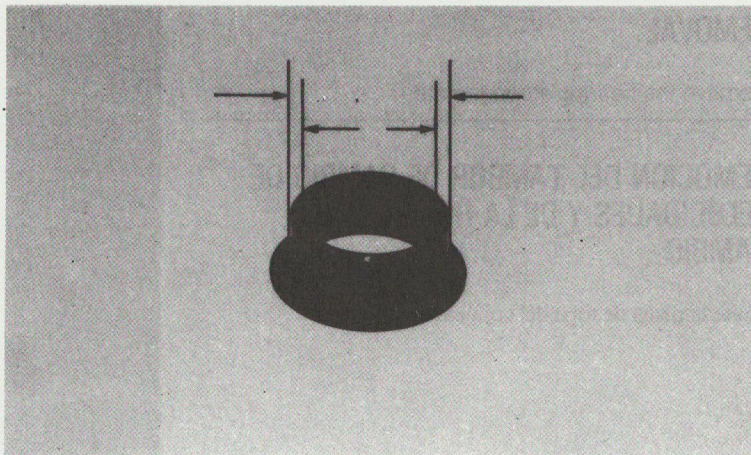
Measure the I.D. and O.D. of the countershaft bushings.

SERVICE LIMITS:

I.D. : 20.10 mm (0.792 in)

O.D.: M6 gear: 27.93 mm (1.100 in)

C1 gear: 23.95 mm (0.943 in)



COUNTERSHAFT

Measure the O.D. of the mainshaft and the countershaft.

SERVICE LIMITS:

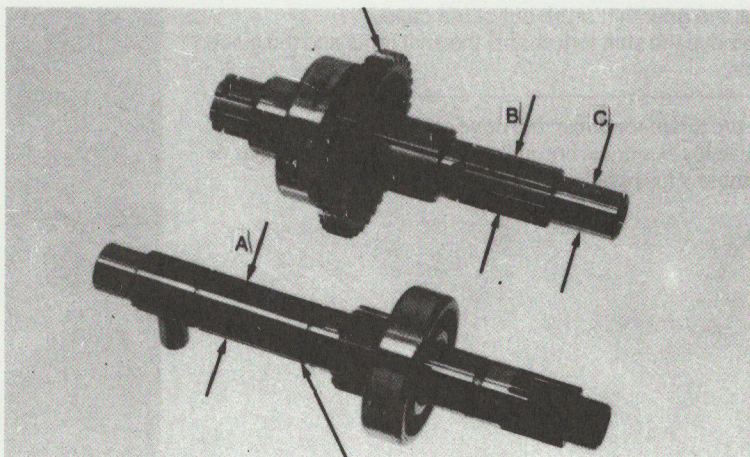
A: 24.93 mm (0.981 in)

B: 24.93 mm (0.981 in)

C: 19.95 mm (0.785 in)

Calculate the clearance between the gear and the gear shaft or bushing.

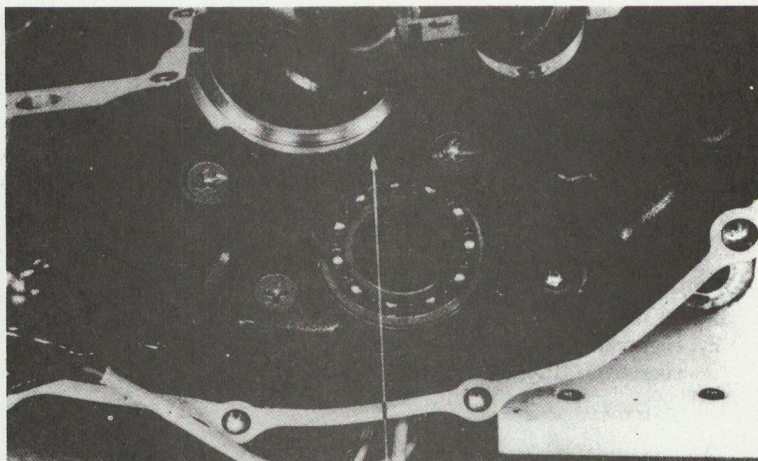
SERVICE LIMIT: 0.10 mm (0.004 in)



MAINSHAFT

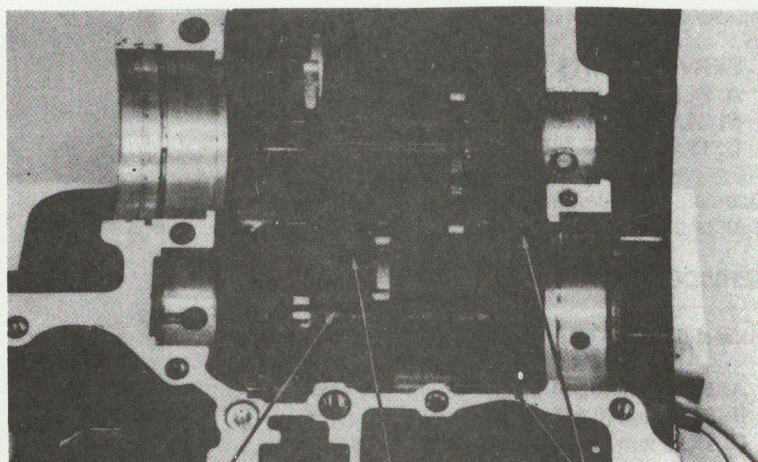
GEARSHIFT DRUM AND SHIFT FORK REMOVAL

Remove the bearing stopper plate.



BEARING STOPPER PLATE

Pull the gearshift drum out of the case.
Remove the shift fork shafts, the shift forks and the guide pins.

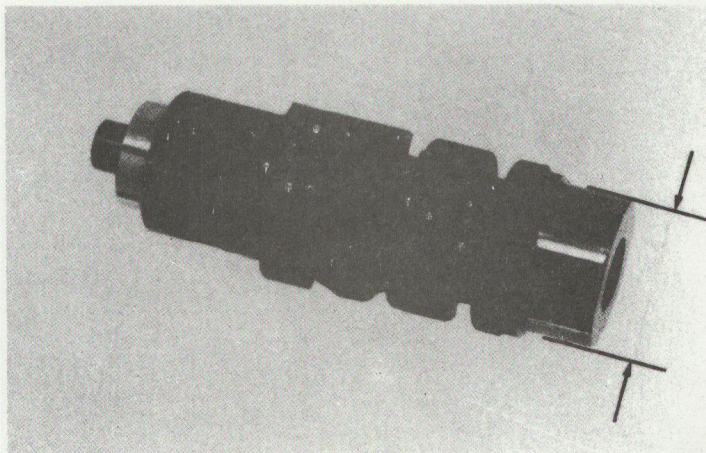


GEARSHIFT DRUM GUIDE PIN SHIFT FORK SHAFT

• GEARSHIFT DRUM AND SHIFT FORK INSPECTION

Measure the shift drum O.D..

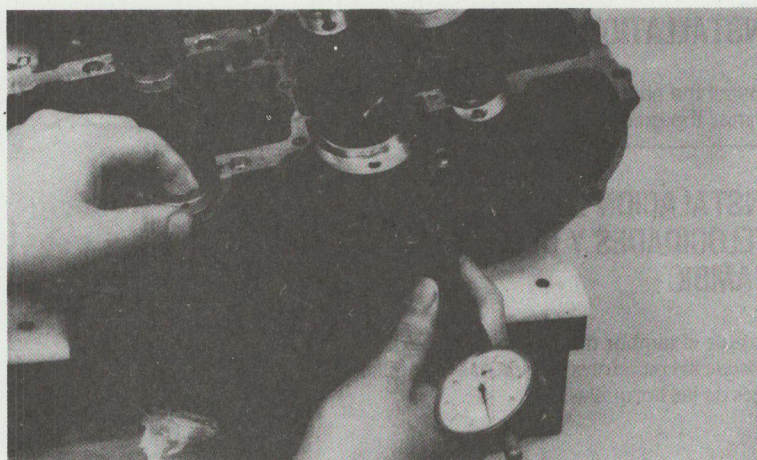
SERVICE LIMIT: 34.90 mm (1.374 in)



TRANSMISSION

Measure the case I.D..

SERVICE LIMIT: 35.05 mm (1.380 in)

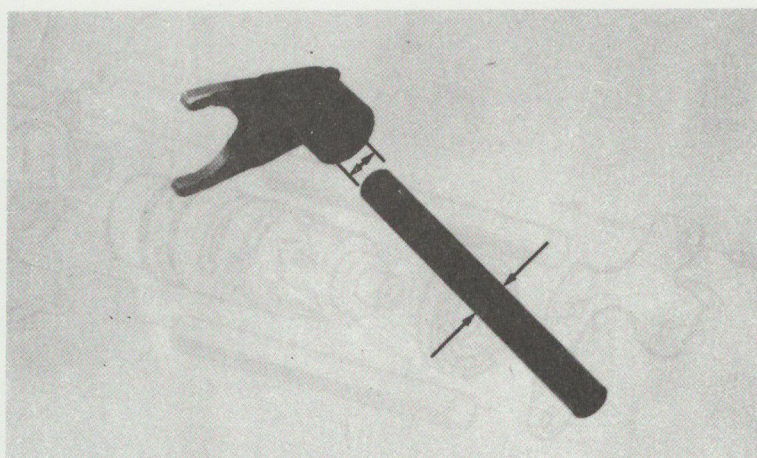


Measure the shift fork shaft O.D..

SERVICE LIMIT: 12.95 mm (0.510 in)

Measure the shift fork I.D..

SERVICE LIMIT: 13.05 mm (0.514 in)

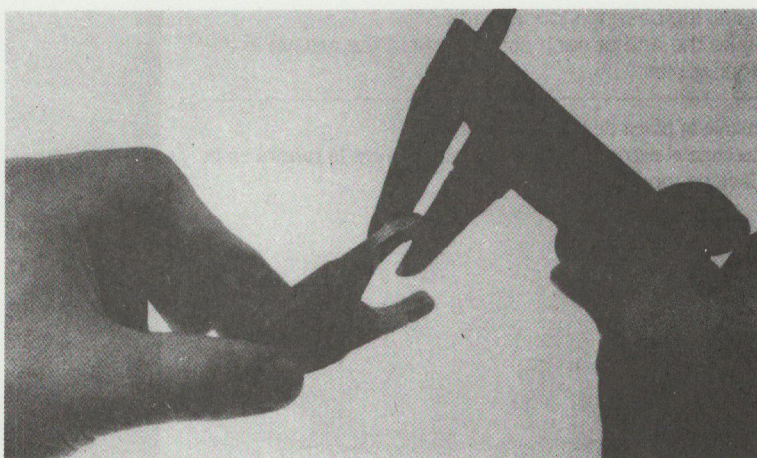


Measure the claw thickness.

SERVICE LIMIT:

M3 gear : 5.85 mm (0.230 in)

C5 and C6 gears: 4.85 mm (0.191 in)

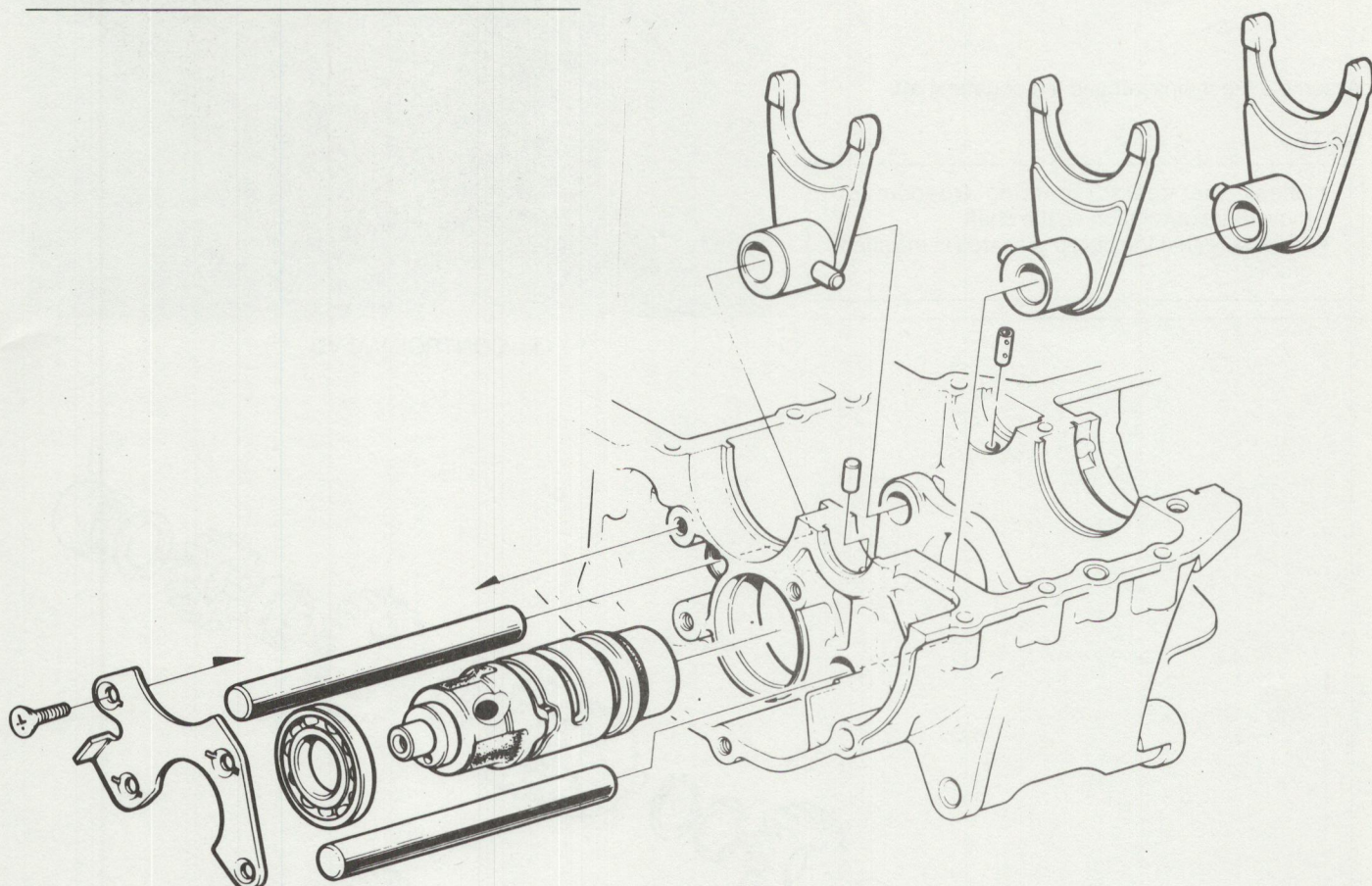


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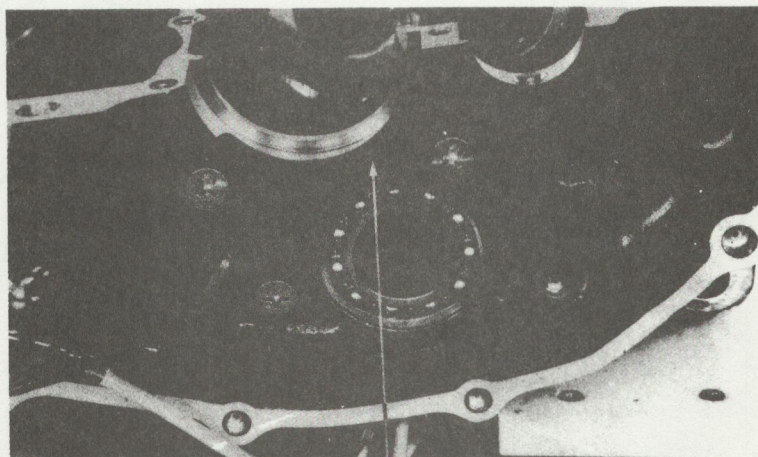
CB450N

GEARSHIFT DRUM AND SHIFT FORK INSTALLATION

Install the shift drum.
Install the guide pins, the shift forks and the fork shafts.



Install the bearing stopper plate.
Stake the end of each screw against the groove in the
stopper plate.



BEARING STOPPER PLATE

TRANSMISSION ASSEMBLY

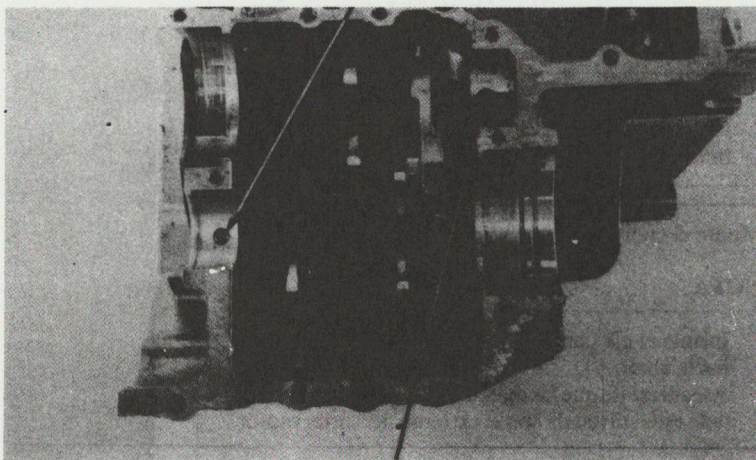
Install the dowel pin and the oil control valve.

Assemble the mainshaft and the countershaft.

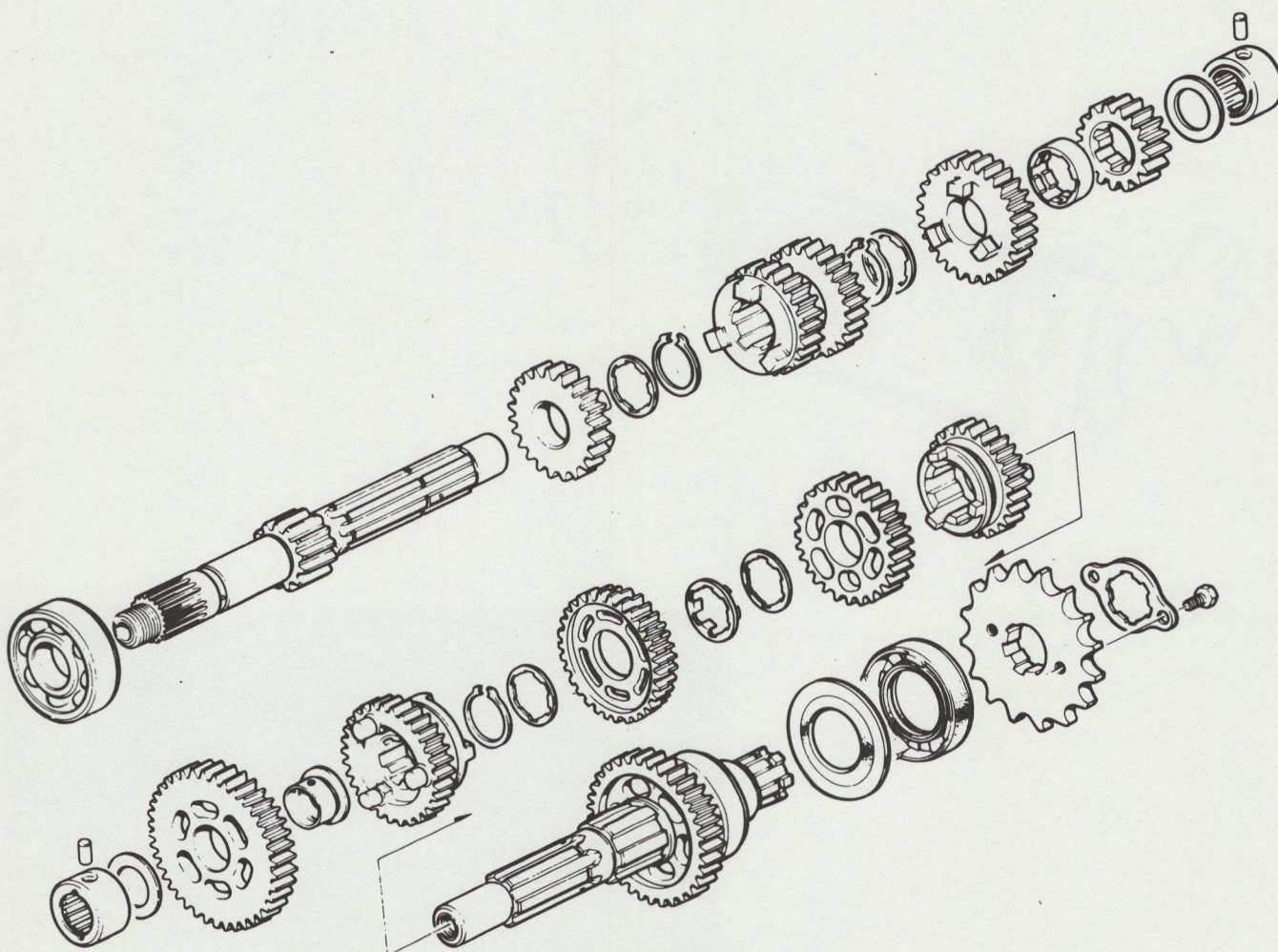
NOTE

- Check the gears regarding freedom of movement or rotation on the shaft.
- Make sure that the circlip is seated in the shaft groove.

DOWEL PIN



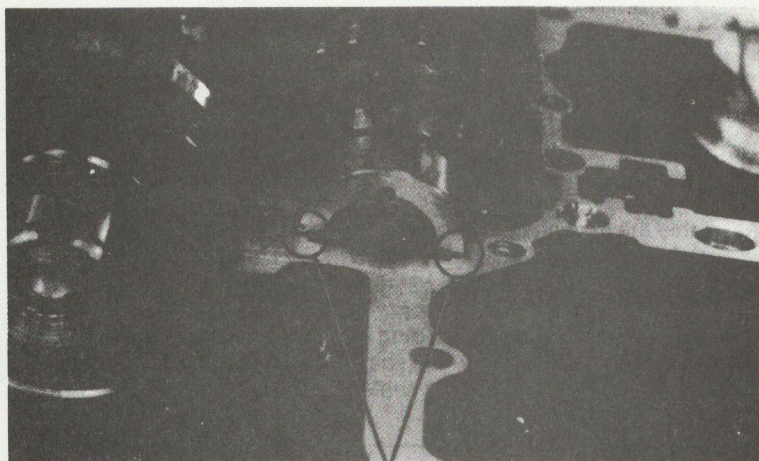
OIL CONTROL VALVE



Assemble the mainshaft.

NOTE

Install the shaft with the needle bearing hole facing down. Check that the aligning marks on the bearing are flush with the end of the crankcase.

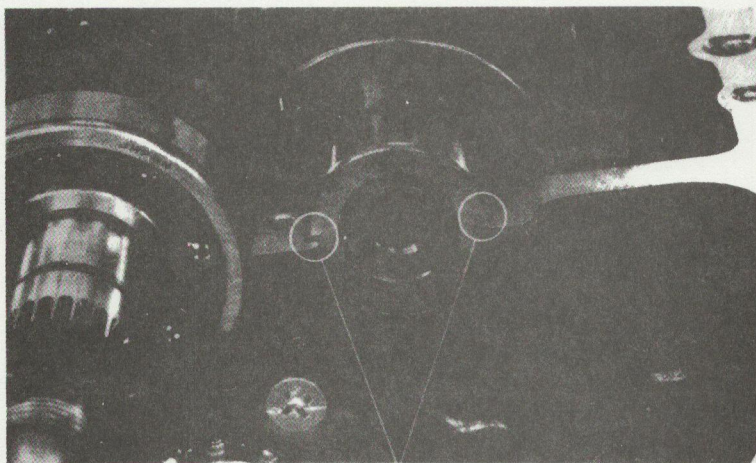


ALIGN

Install the countershaft.

NOTE

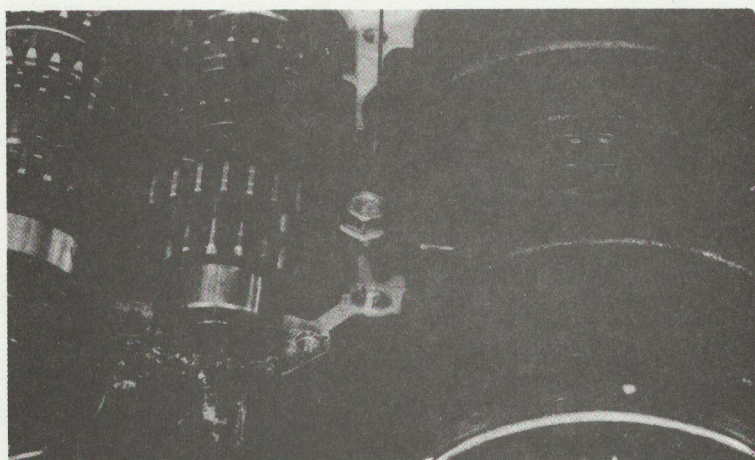
Align the marks on the needle roller bearing with the end of the case and then fit the hole in the bearing over the dowel pin.



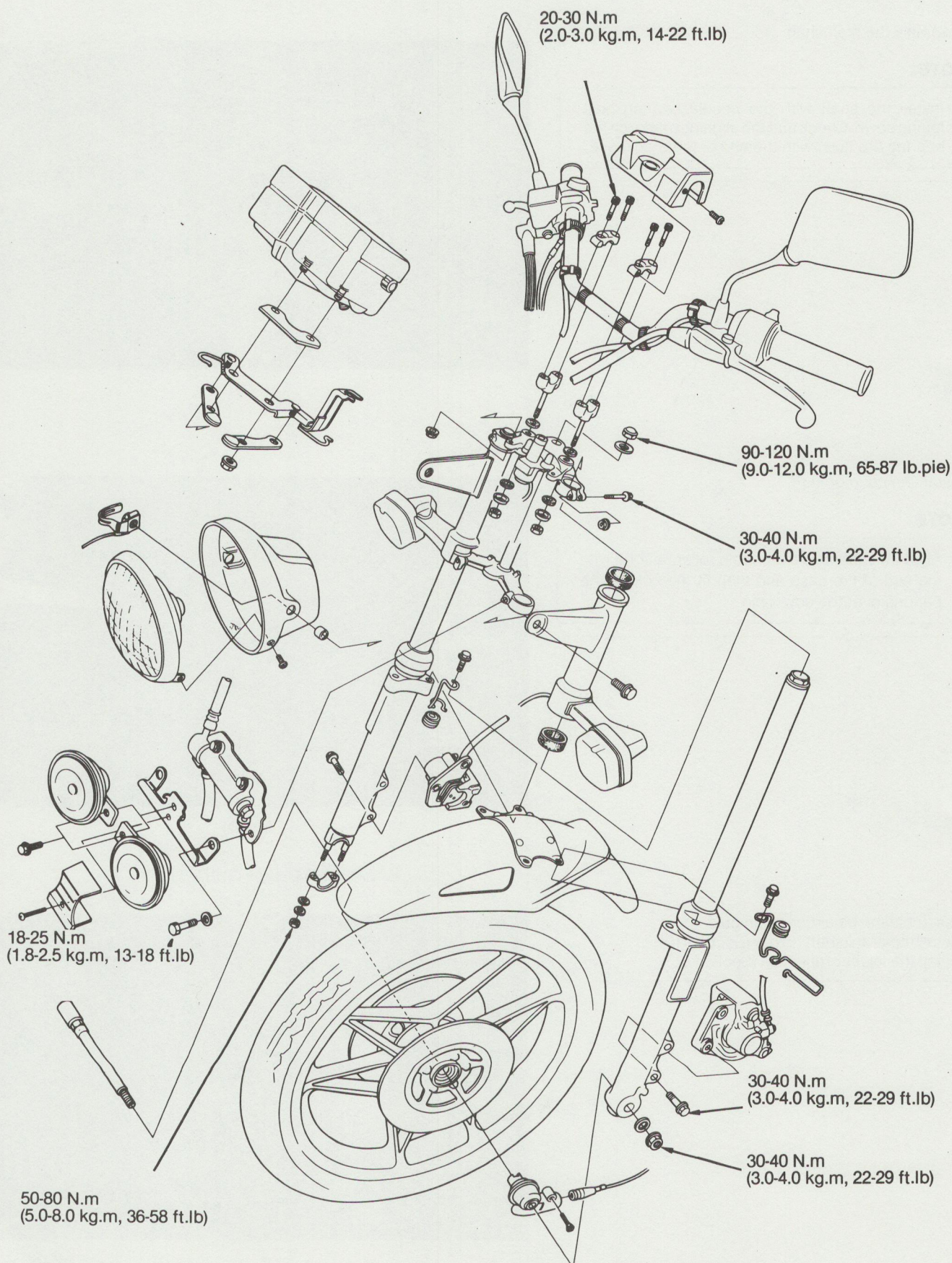
ALIGN

BALANCER CHAIN GUIDE

Assemble the balancer chain guide.
Install the crankshaft holder (Section 10).
Install the lower crankcase (Section 9).



FRONT WHEEL / SUSPENSION



SERVICE INFORMATION	12—1
TROUBLESHOOTING	12—2
HANDLEBAR	12—3
FRONT WHEEL	12—7
FRONT FORK	12—16
STEERING STEM	12—25

SERVICE INFORMATION

• WORKING PRACTICE

This section describes the inspection and repair of the front wheel, the suspension and the steering system. Rest the motorcycle on the center stand and place a support under the engine before removing the front wheel.

• SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Axle shaft runout		—	0.2 mm (0.008 in)
Front wheel rim runout	Radial	—	2.0 mm (0.08 in)
	Axial	—	2.0 mm (0.08 in)
Front cushion spring free length		490.9 mm (19.33 in)	480.0 mm (18.90 in)
Front fork tube bend		—	0.2 mm (0.008 in)

• SPECIAL TOOLS/COMMON TOOLS

Special Tools

HOLLOW SET WRENCH (6 mm)	07917—3230000
BALL RACE DRIVER (BOTTOM)	07945—3330300
BALL RACE DRIVER (TOP)	07946—3290100
BALL RACE REMOVER	07953—3330000

Common Tools

LOCK NUT WRENCH SOCKET (30 x 32 cm)	07716—0020400
EXTENSION BAR	07716—0020500
BEARING DRIVER HANDLE (A)	07749—0010000
BEARING DRIVER OUTER (42 X 47 mm)	07746—0010300
BEARING DRIVER PILOT (15 mm)	07746—0040300
FRONT FORK OIL SEAL DRIVER BODY	07747—0010100
FRONT FORK OIL SEAL ATTACHMENT (D)	07747—0010500
BEARING REMOVER SHAFT	07746—0050100
BEARING REMOVER HEAD (15 mm)	07746—0050400

TROUBLESHOOTING

Head steering

1. Too tight steering stem nut
2. Faulty steering stem bearings
3. Damaged steering stem ball race and/or cone race
4. Insufficient tire pressure

Steers to one side or does not track straight

1. Unbalanced right and left shock absorbers
2. Bent front forks
3. Bent front axle; wheel installed incorrectly

Front wheel wobbling

1. Distorted rim
2. Worn front wheel bearing
3. Faulty tire
4. Axle not tightened properly

Soft suspension

1. Weak fork spring
2. Insufficient fluid in front forks

Hard suspension

1. Incorrect fluid weight in front forks

Front suspension noise

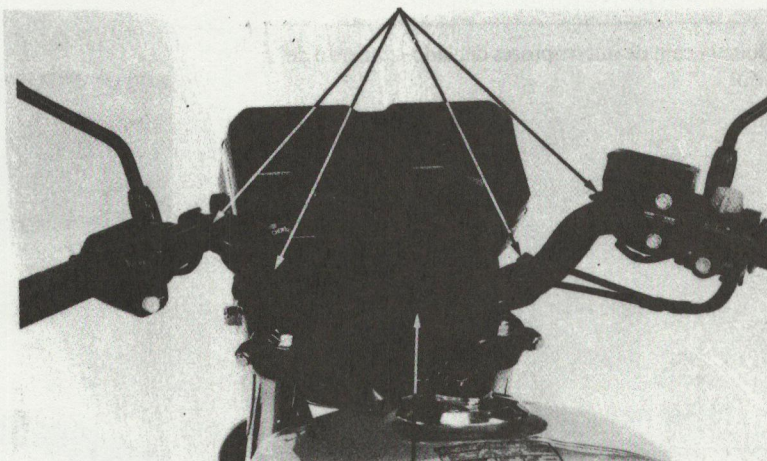
1. Slider binding
2. Insufficient fluid in forks
3. Loose front forks or springs

HANDLEBAR

• HANDLEBAR REMOVAL

Remove the wire bands.
Remove the handlebar holder cover.

WIRE BANDS



HANDLEBAR HOLDER COVER

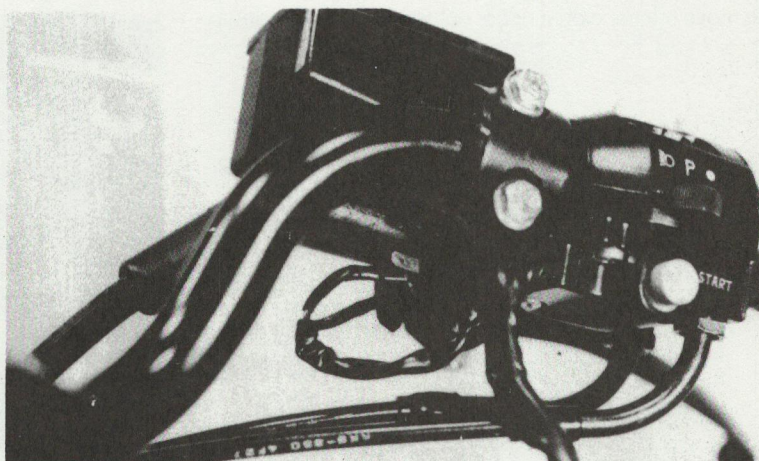
Disconnect the stoplight switch wires and remove the two screws on the switch housing.
Remove the brake master cylinder.

CAUTION

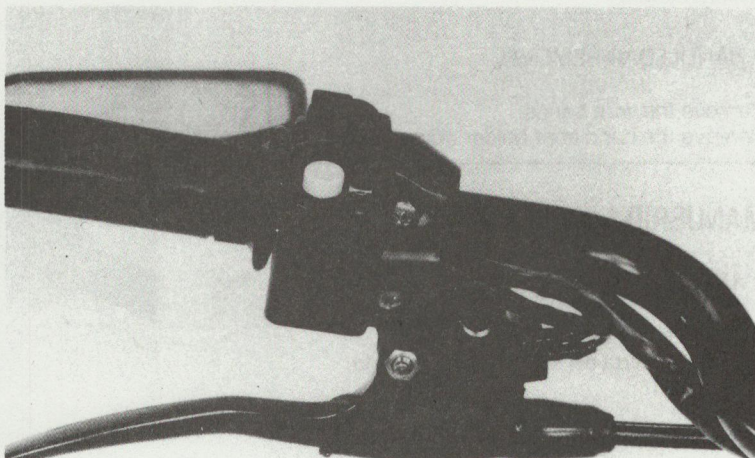
Secure the brake cylinder in an upright position to prevent the fluid from leaking and damaging the paint and to prevent air from entering the brake system.

NOTE

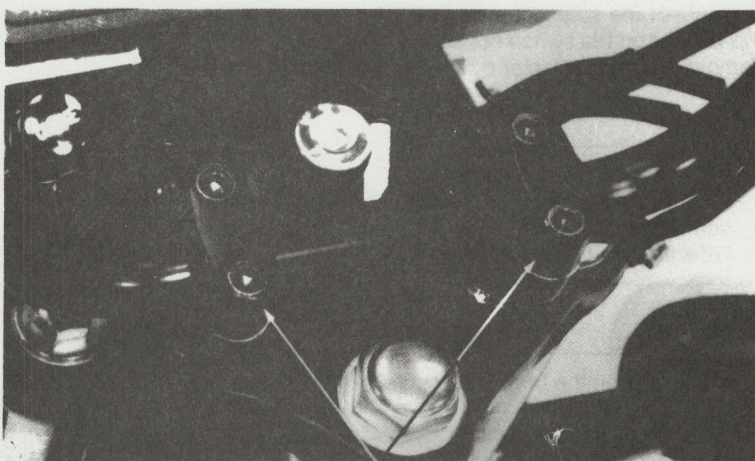
Do not loosen the brake hose unless necessary.



Remove the left handlebar switch housing.



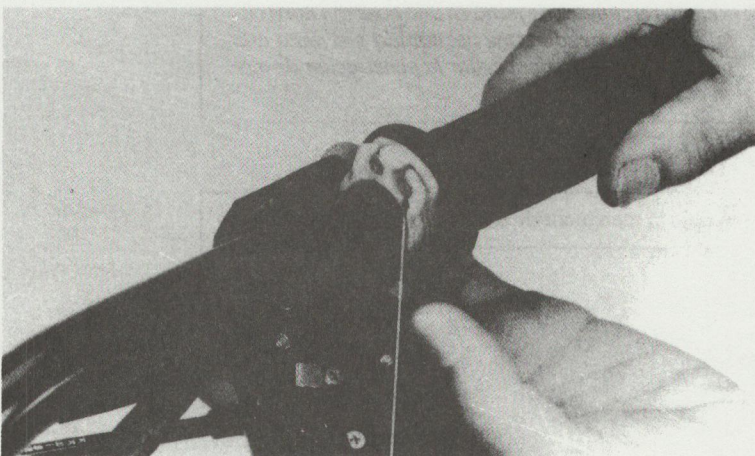
Remove the handlebar upper holders and the handlebar.



UPPER HOLDERS

• HANDLEBAR INSTALLATION

Apply grease to the throttle grip sliding surface and slide the throttle grip over the handlebar.
Hang the throttle cable ends as shown.



THROTTLE CABLE END

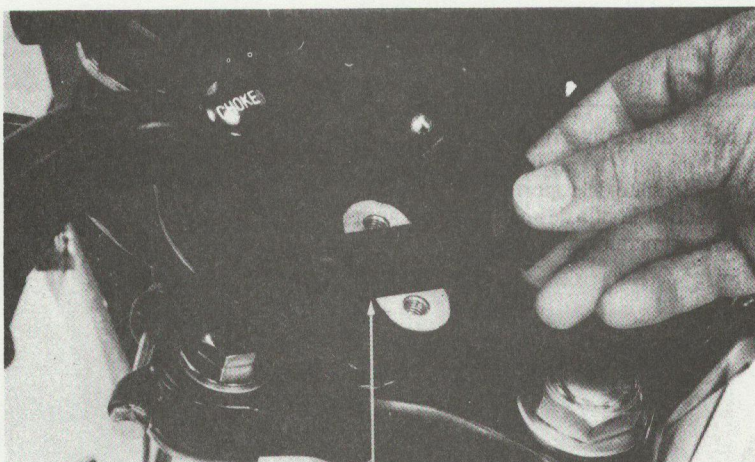
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FRONT WHEEL / SUSPENSION

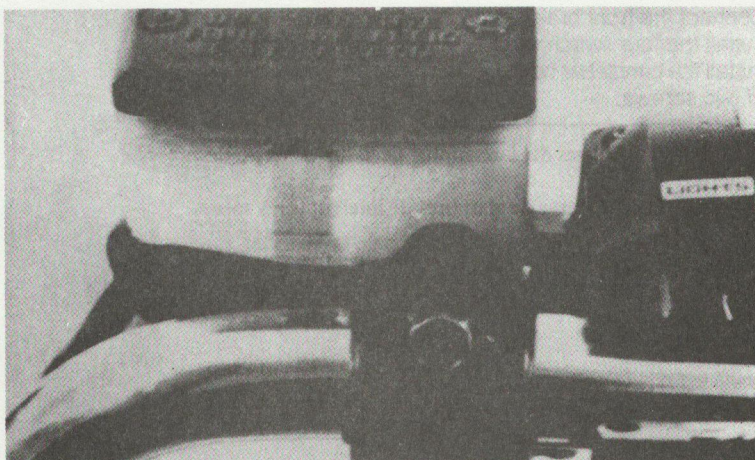
Place the handlebar onto the lower holder aligning the punch mark with the upper face of the lower holder. Install the upper holders with the punch mark facing forward and tighten the front bolts first, then tighten the rear bolts.

TORQUE: 20—30 N.m (2.0—3.0 kg.m, 14—22 ft.lb)

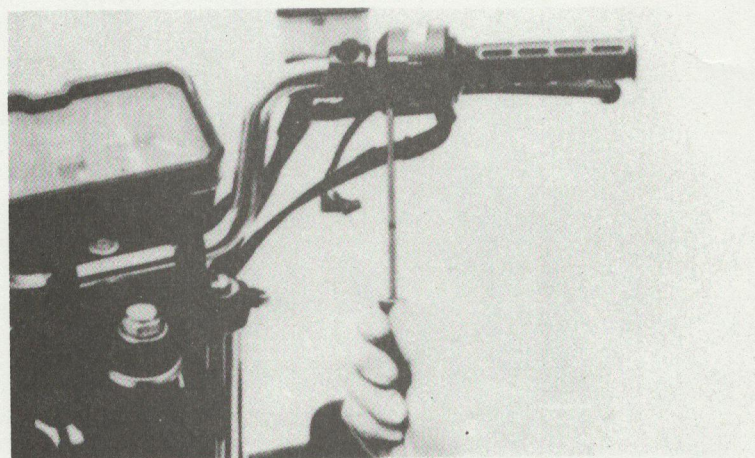


PUNCH MARK

Install the front brake master cylinder with the 'UP' mark on the holder facing up. Align the split of the holder with the handlebar punch mark. Tighten the upper bolt first, then the lower bolt.

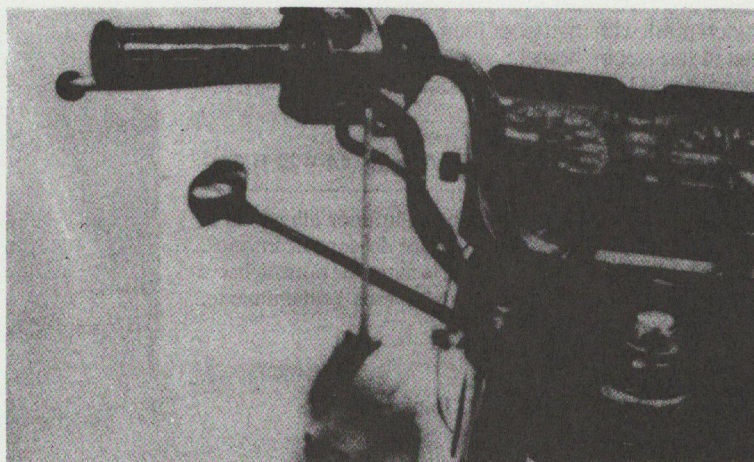


Align the ledge of the master cylinder holder with the split in the switch housing and tighten the front screw first, then tighten the rear screw.



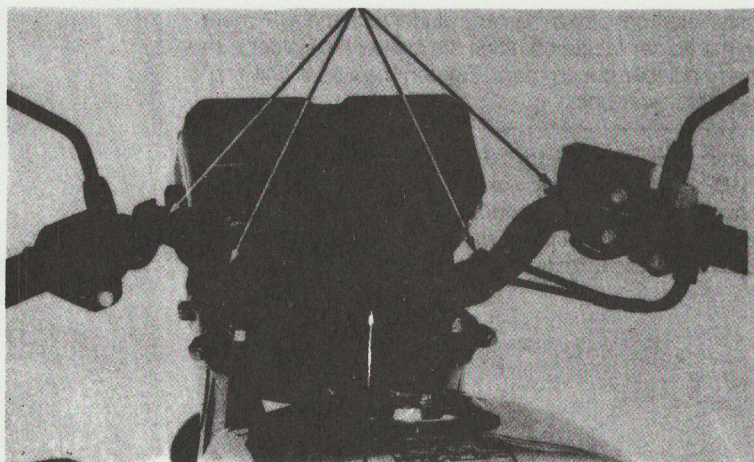
FRONT WHEEL / SUSPENSION

Install the left handlebar switch housing.
Align the ledge of the clutch lever holder with the split in the switch housing and tighten the front screw first, then tighten the rear screw.



WIRE BANDS

Connect the front brake stoplight-switch wires.
Install the four switch wire bands on the handlebar.
Install the handlebar holder cover and attach it by means of two screws.



FRONT WHEEL

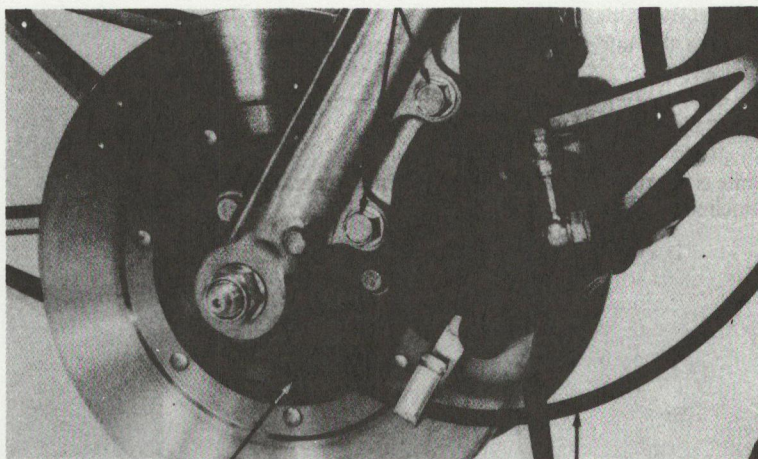
• FRONT WHEEL REMOVAL

Raise the front wheel off the ground by placing a block or safety stand under the engine.

Remove the speedometer cable set screw and the speedometer cable.

Remove the left brake caliper bracket bolts and the caliper.

BOLTS



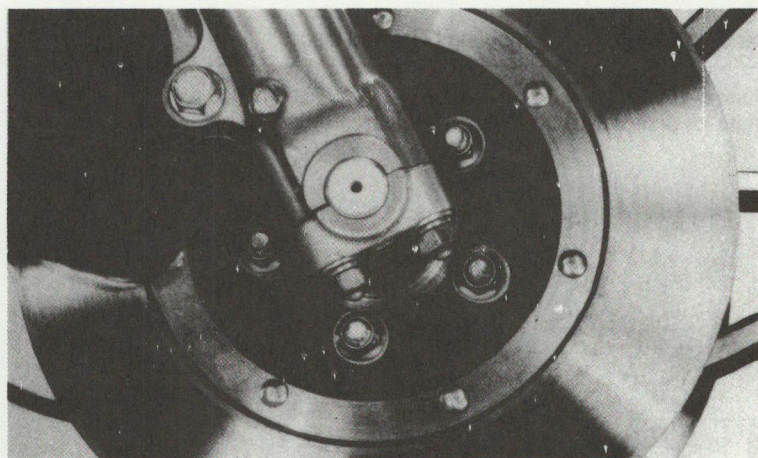
SCREW

SPEEDOMETER CABLE

Remove the axle nut.
Remove the axle holder.
Pull out the axle and remove the front wheel.

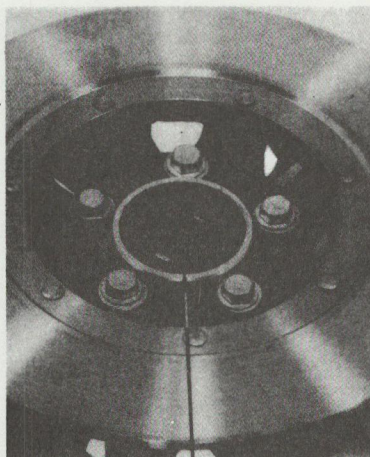
NOTE

Do not operate the front brake lever after removing the front wheel. To do so will cause difficulty in fitting the brake disc between the brake pads.

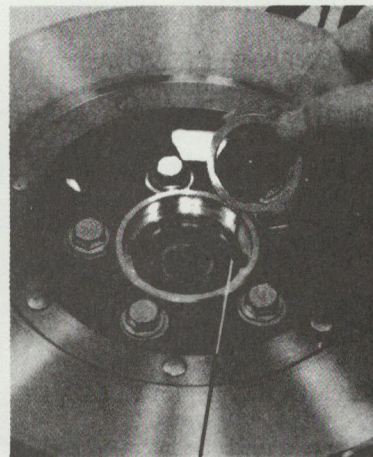


• WHEEL DISASSEMBLY

Remove the left dust seal and the speedometer gear retainer.

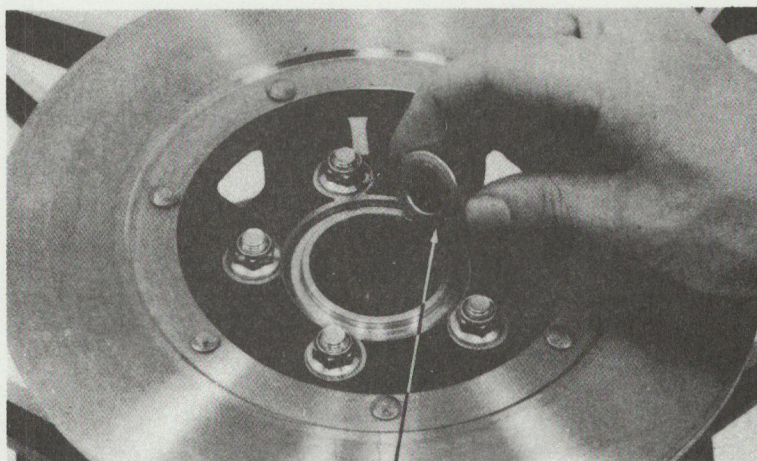


LEFT DUST SEAL



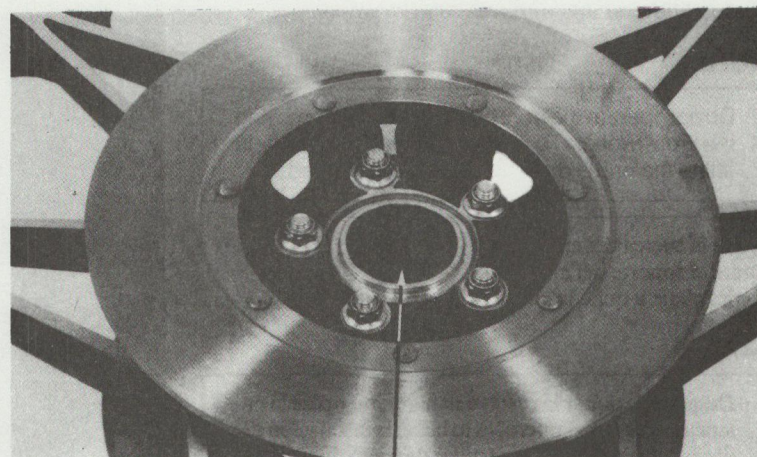
RETAINER

Remove the side collar.



COLLAR

Remove the right dust seal.
Remove the brake disc mounting bolts and discs.



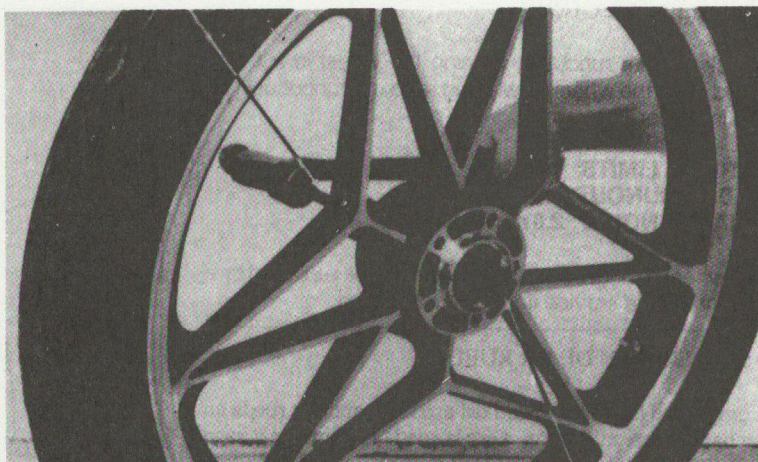
RIGHT DUST SEAL

BEARING REMOVER SHAFT 07746-0050100

Remove the wheel bearings and the distance collar from the hub by means of the special tools.

NOTE

If the bearings are removed, they should be replaced by new ones. See inspection below.



BEARING REMOVER HEAD, 15 mm 07746-0550400

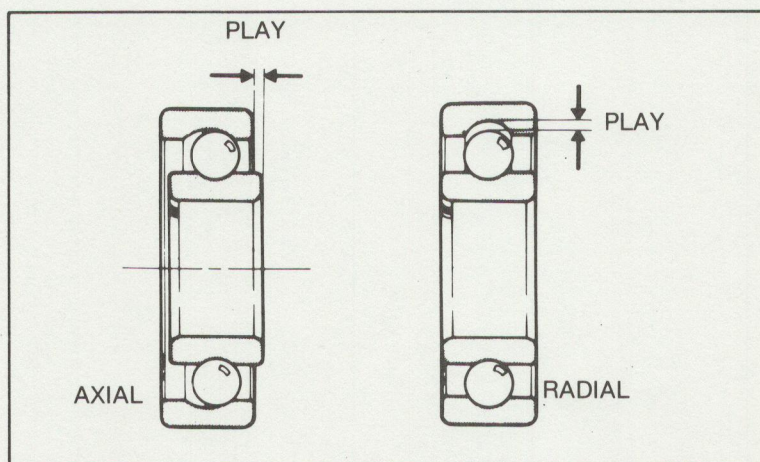
• WHEEL BEARING INSPECTION

Check the wheel bearing play by placing the wheel in a truing stand and spinning the wheel by hand. Replace the bearings by new ones if they are noisy or have excessive play.

SERVICE LIMITS:

AXIAL PLAY: 0.05 mm (0.0019 in)

RADIAL PLAY: 0.10 mm (0.004 in)



FRONT WHEEL / SUSPENSION

• WHEEL INSPECTION

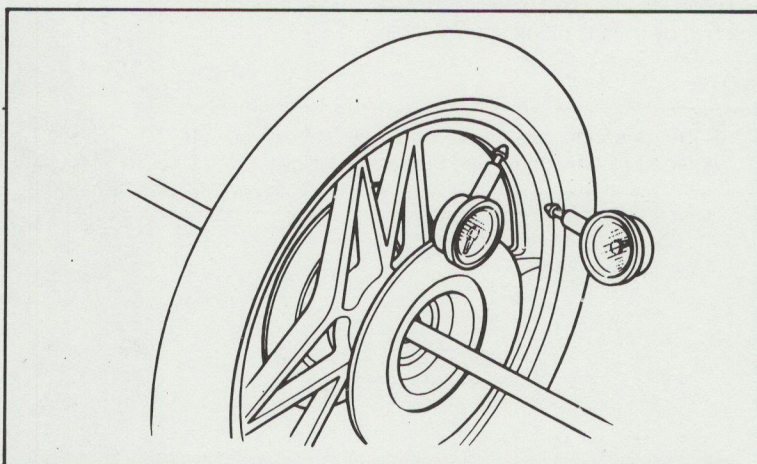
Check the rim runout by placing the wheel in a truing stand. Spin the wheel slowly and read the runout using a dial indicator.

SERVICE LIMITS:

RADIAL RUNOUT: 2.0 mm (0.08 in)

AXIAL RUNOUT: 2.0 mm (0.08 in)

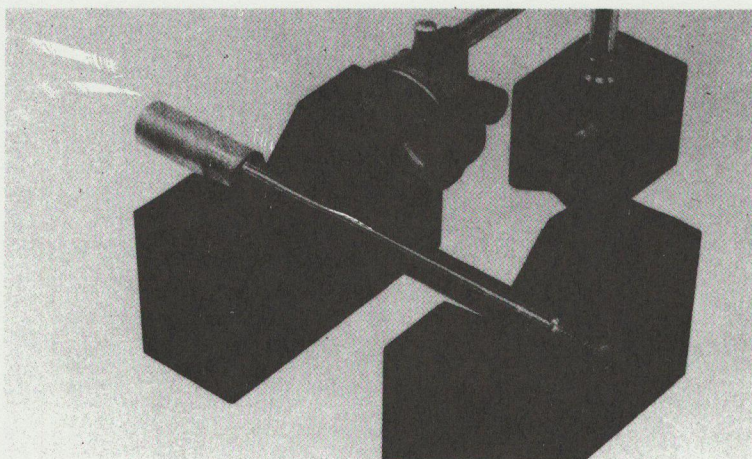
The wheel cannot be repaired and must be replaced by a new one if the service limits are exceeded.



• AXLE INSPECTION

Set the axle in V blocks and measure the runout. The actual runout is 1/2 of TIR (Total Indicator Reading).

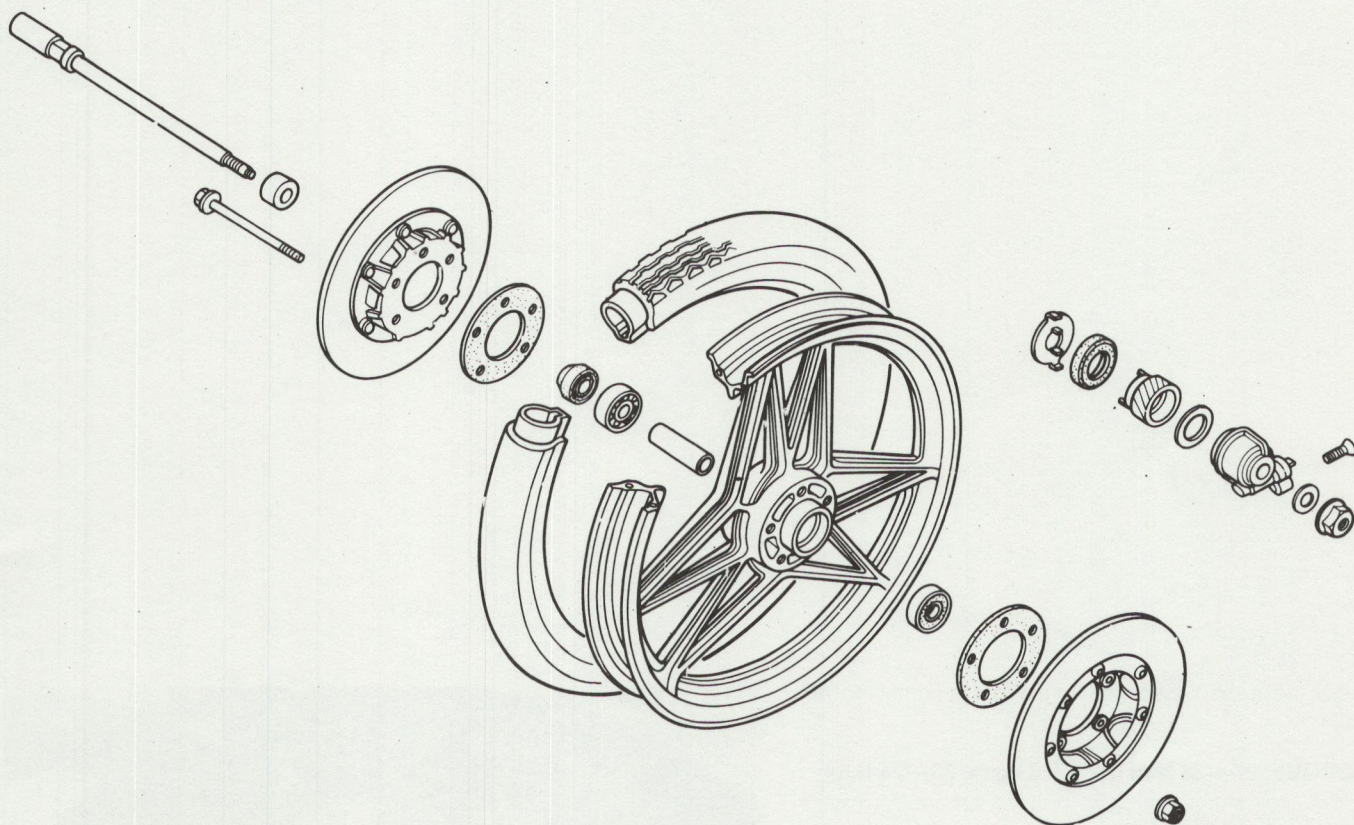
SERVICE LIMIT: 0.2 mm (0.008 in)



- FRONT WHEEL ASSEMBLY

WARNING

Do not get grease on the brake disc or stopping power will be reduced.



FRONT WHEEL / SUSPENSION

Pack all bearing cavities with grease.
Drive in the left bearing first and press the distance collar into place.

NOTE

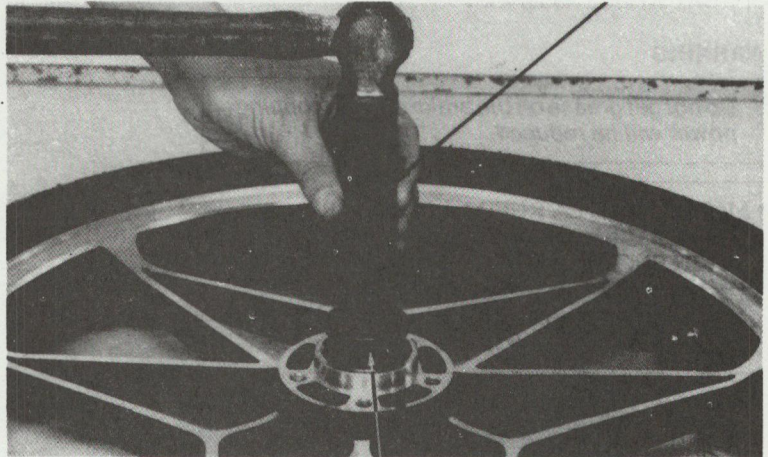
Be certain the distance collar is in position before installing the right bearing.

Drive in the right bearing squarely.

NOTE

Drive the bearing into position, making sure that it is fully seated and that the sealed side is facing out.

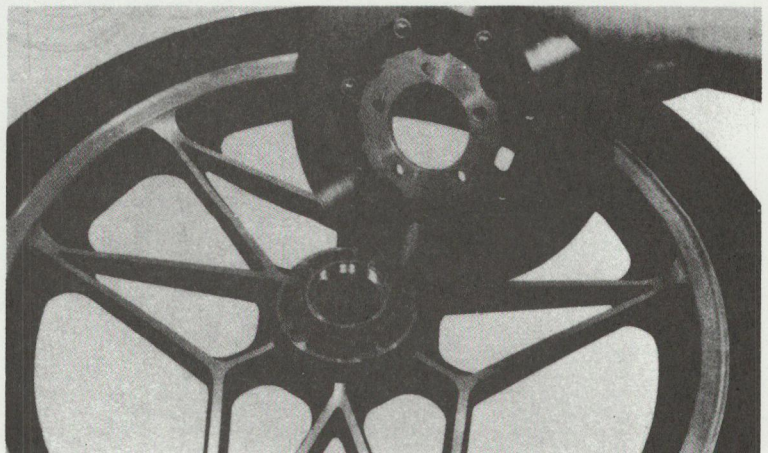
BEARING DRIVER HANDLE (A) 07749-0010000



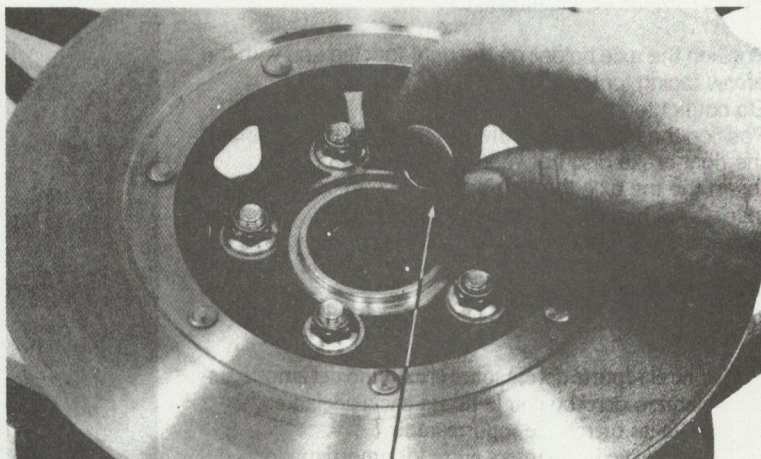
BEARING DRIVER OUTER, 42 × 47 mm 07746-0010300
BEARING DRIVER PILOT, 15 mm 07746-0040300

Install the brake discs on the front wheel by tightening the bolts.

TORQUE: 27—33 N.m (2.7—3.3 kg.m, 20—24 ft.lb)

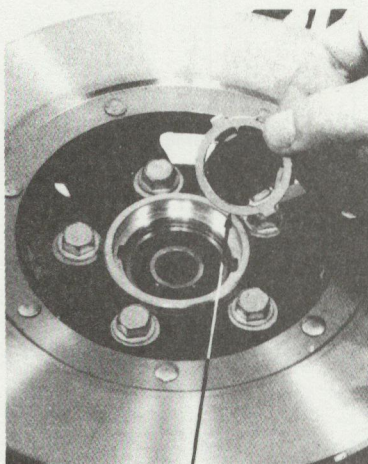


Lubricate the inside of the dust seal with grease.
Install the dust seal and collar in the hub on the right side.

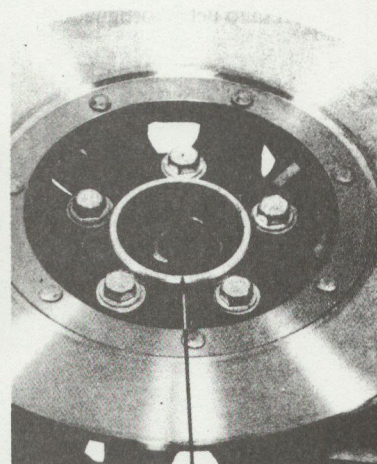


COLLAR

Install the speedometer gear retainer in the hub, aligning tabs on the retainer with the grooves in the hub.
Lubricate the inside of the dust seal and install the dust seal.

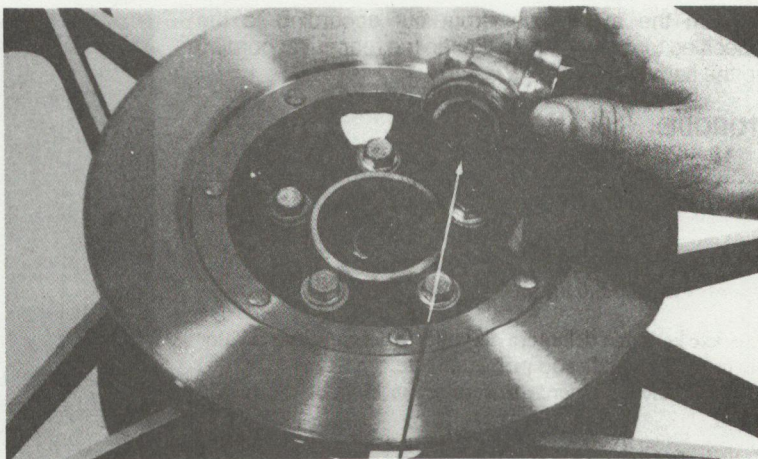


RETAINER



DUST SEAL

Disassemble the speedometer gear box and lubricate the gears and sliding faces.
Install the speedometer gear in the wheel hub, aligning the speedometer gear box tangs with the notches in the retainer.
Clean the brake discs with a high quality degreasing agent.



SPEEDOMETER GEAR BOX

FRONT WHEEL / SUSPENSION

FRONT WHEEL INSTALLATION

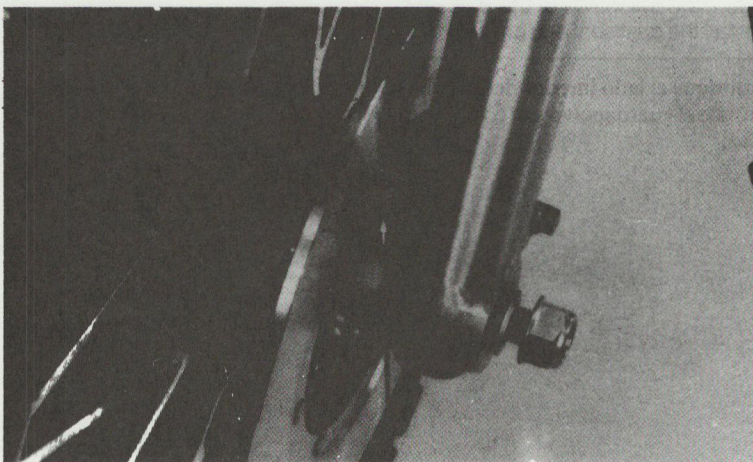
Position the axle holder on the right fork leg end with the arrow facing forward.

Do not tighten the holder nuts yet.

Position the front wheel between the fork legs and insert the right brake disc between the brake pads.

Insert the the axle through the wheel hub from the right side.

Position the lug on the speedometer gearbox against the left fork lug.



LUG

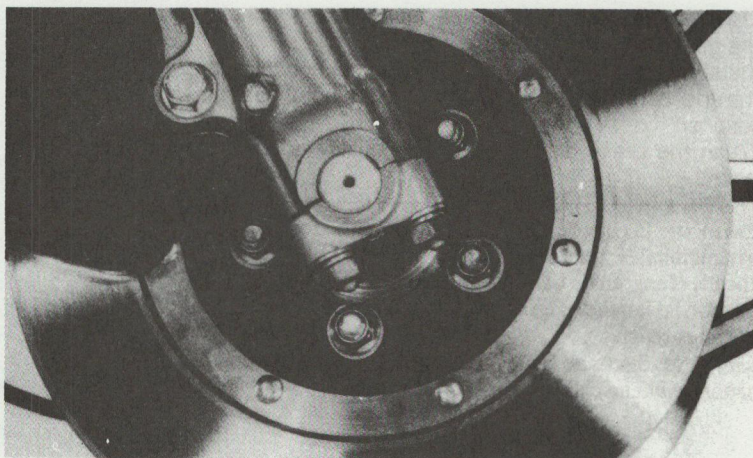
Tighten the axle nut.

TORQUE: 50—80 N.m (5.0—8.0 kg.m, 36—58 ft.lb)

Tighten the axle holder front nut according to the specified torque first, then tighten the rear nut according to the same torque.

TORQUE:

18—25 N.m (1.8—2.5 kg.m, 13—18 ft.lb)



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FRONT WHEEL / SUSPENSION

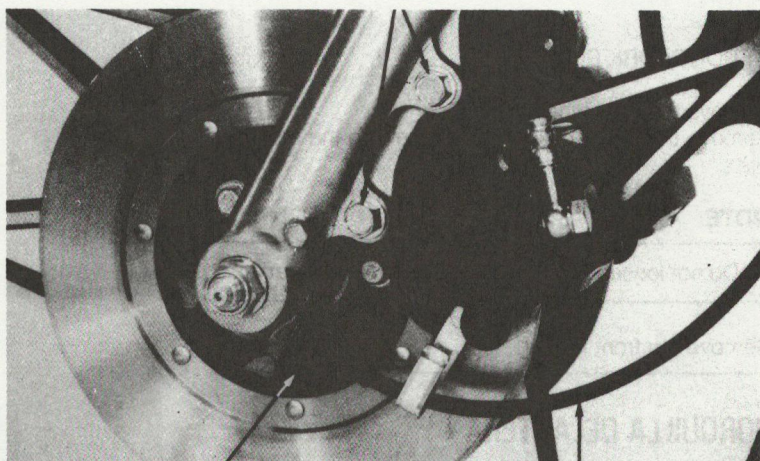
MOUNTING BOLTS

Install the left brake caliper taking care not to damage the brake pads.

Install the caliper bracket mounting bolts.

TORQUE: 30—40 N.m (3.0—4.0 kg.m, 22—29 ft.lb)

Install the speedometer cable.



SCREW

SPEEDOMETER CABLE

Measure the distance between the outside surface of the right brake disc and the rear of the right caliper holder with a 0.7 mm (0.028 in) feeler gauge. If the gauge cannot be inserted, pull the right fork out until the gauge can be inserted.

CAUTION

After installing the wheel, apply the brakes several times and recheck the clearance on both sides. Failure to provide the specified clearance will damage the brake discs and affect braking efficiency.



0.7 mm (0.028 in) FEELER GAUGE

FRONT FORK

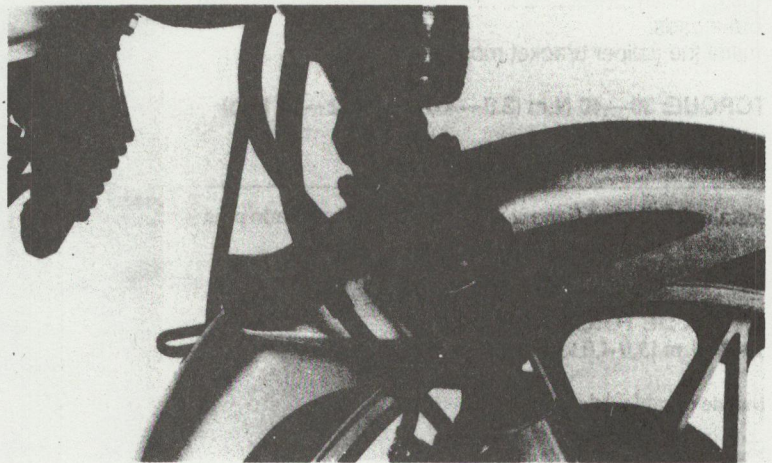
• FRONT FORK REMOVAL

Remove the front wheel.
Remove the brake caliper by unscrewing the attaching bolts.

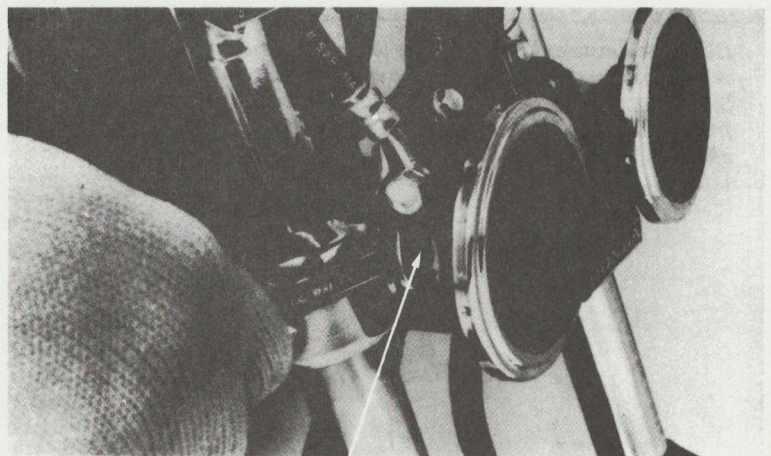
NOTE

Do not loosen the brake hose unless necessary.

Remove the front fender.

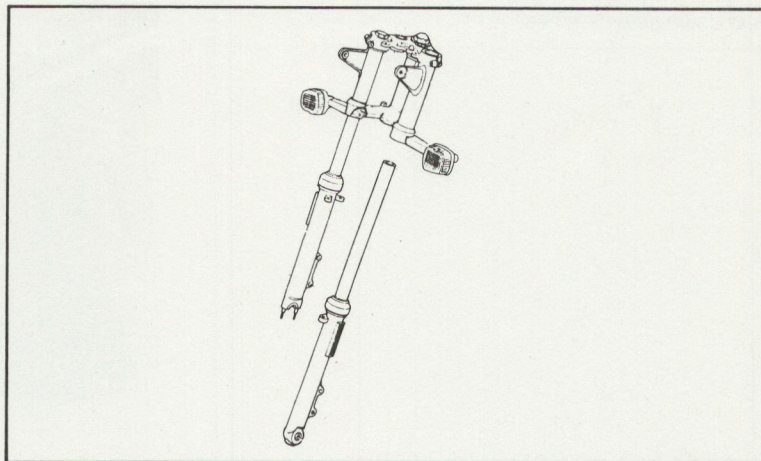


Loosen the front fork attaching bolts at the fork top and bottom bridges.



BOTTOM BRIDGE BOLT

Remove the fork tubes from the bottom fork bridge, rotating them by hand.



• FRONT FORK DISASSEMBLY

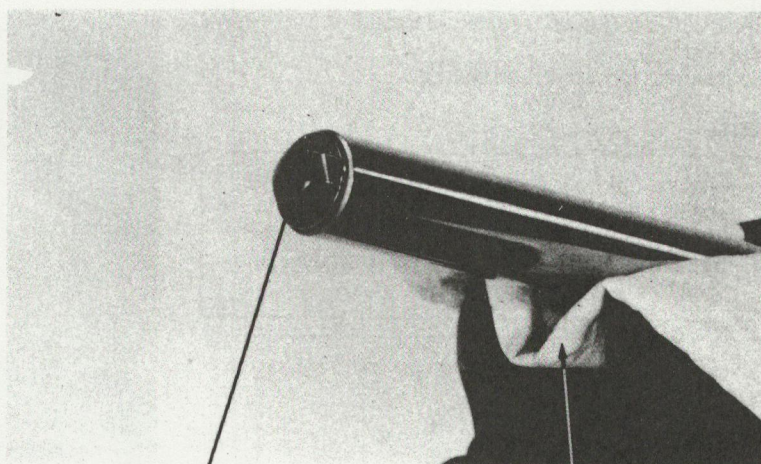
Hold the fork tube in a vise.
Remove the fork bolt.

CAUTION

Set the fork pipe in a vise, avoiding the sliding surface.

WARNING

Use extra care when loosening the bolt since the spring will pop out.

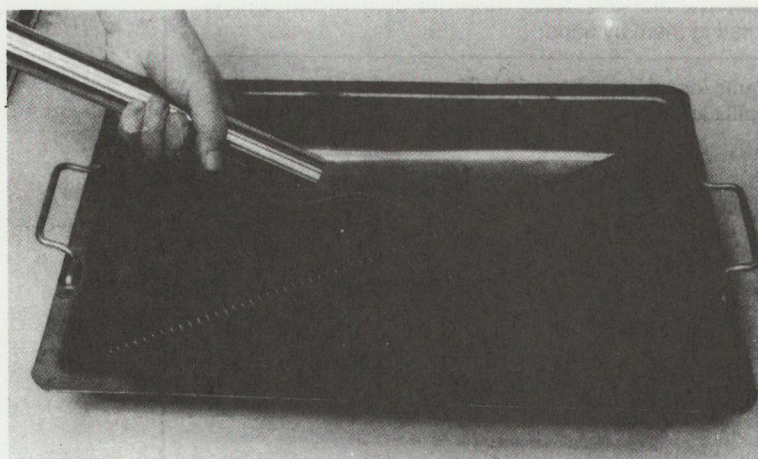


FORK BOLT

RAG OR SOFT JAWS

FRONT WHEEL / SUSPENSION

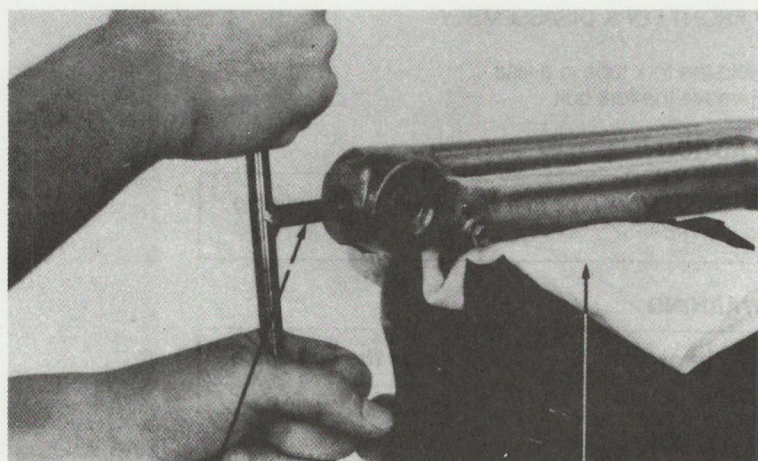
Pour out any remaining fork fluid by pumping the fork up and down several times.



Remove the socket bolt reaching it through the hole in the fork end.
Remove the fork pipes and pistons.

NOTE

- Set the fork bottom case in the soft jaws of a vice, being careful not to tighten excessively.
- Temporarily install the spring and the fork bolt should difficulty be encountered in removing the bolt.



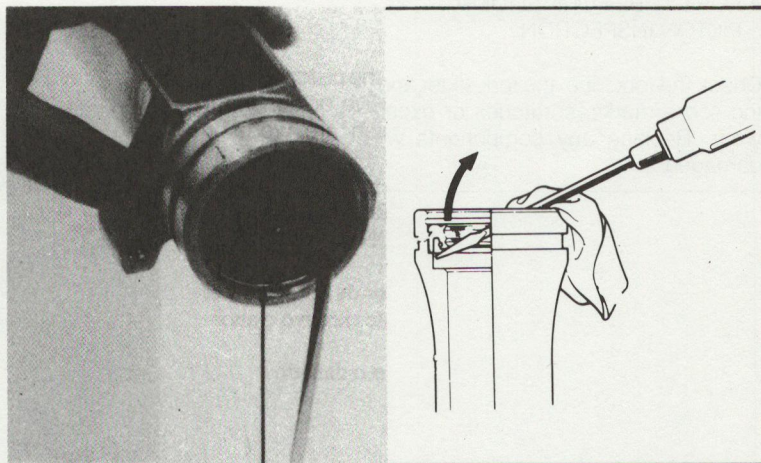
HOLLOW SET WRENCH
(6 mm) 07917-3230000

RAG OR SOFT JAWS

Remove the snap ring.
Carefully lift out the oil seal with the dull end of a screwdriver or the like.

NOTE

Avoid damaging the inner and outer surfaces of the bottom case while removing the seal.



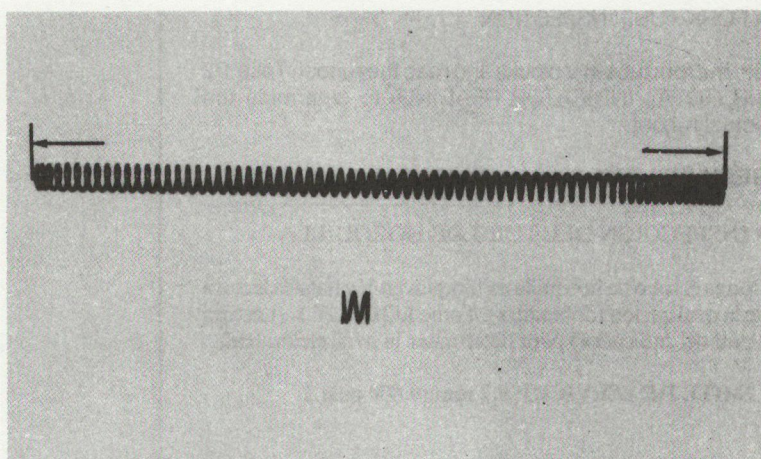
SNAP RING

• FRONT FORK SPRING FREE LENGTH INSPECTION

Measure the fork spring free length.

SERVICE LIMIT: 480.0 mm (18.90 in)

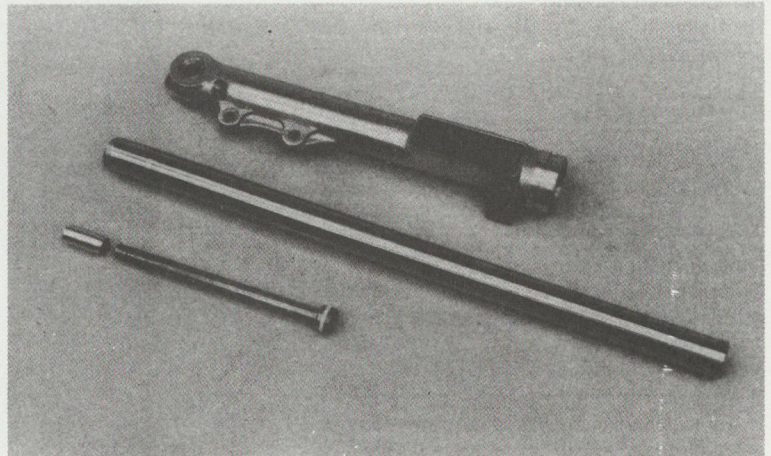
Replace the spring if it is shorter than the service limit.



FRONT WHEEL / SUSPENSION

- FORK TUBE/FORK SLIDER/
PISTON INSPECTION

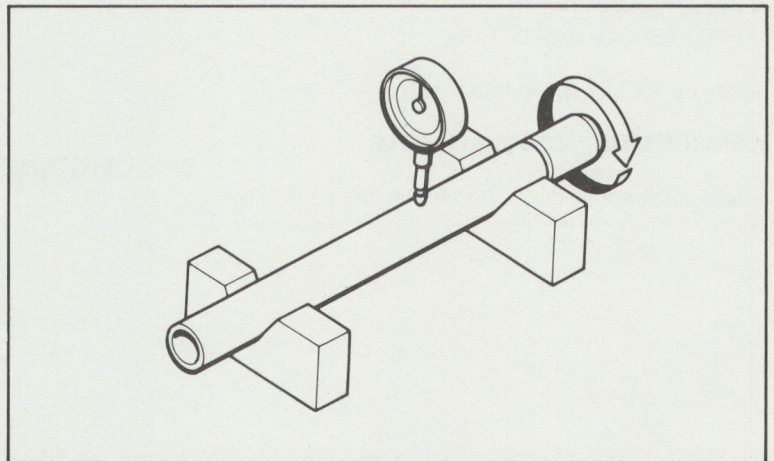
Check the fork tube, the fork slider and the piston regarding score marks, scratches or excessive or abnormal wear. Replace any components which are worn or damaged.



- FORK TUBE INSPECTION

Set the fork tube in V blocks and read the runout. Take 1/2 TIR (TOTAL INDICATOR READING) to determine the actual runout.

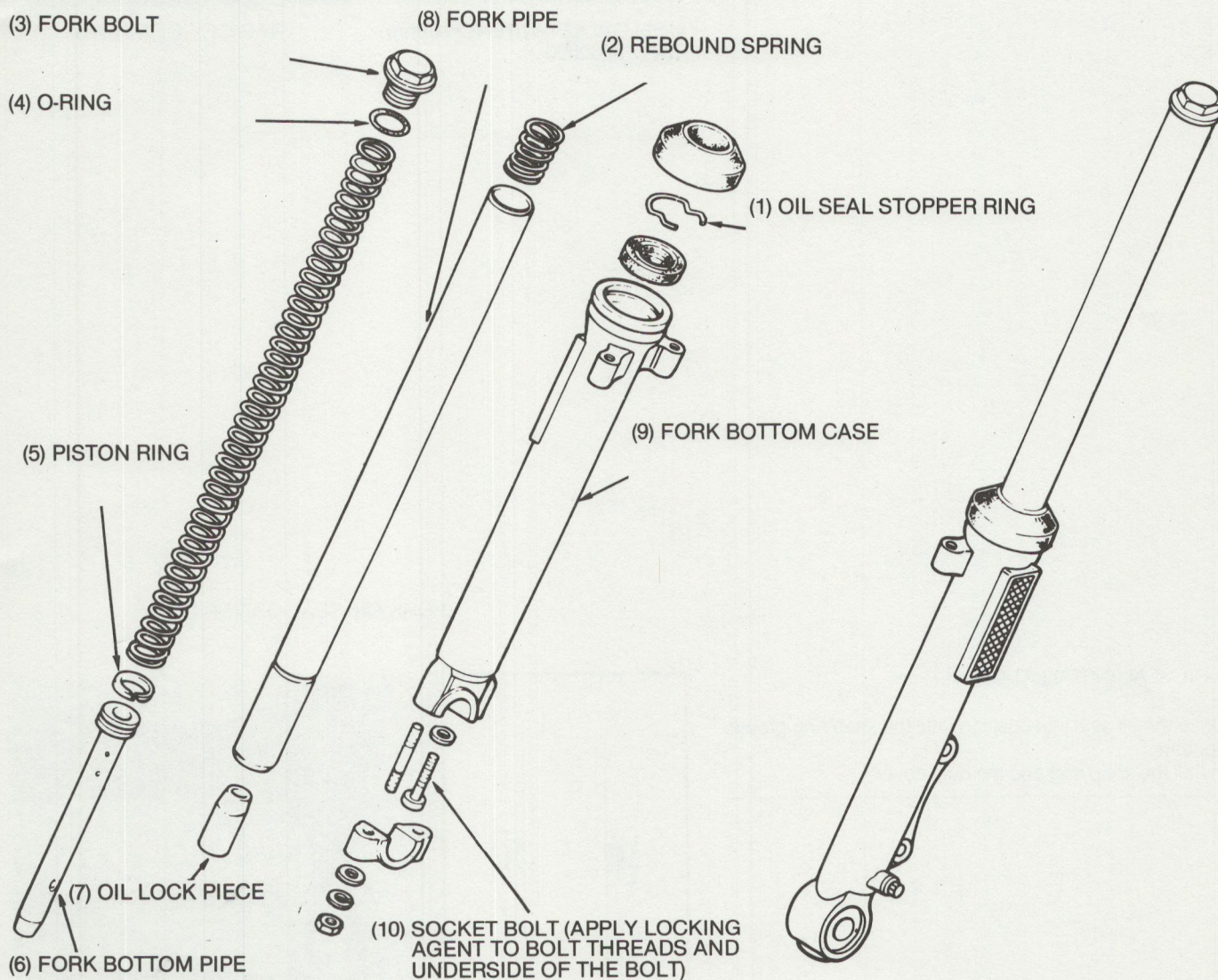
SERVICE LIMIT: 0.2 mm (0.008 in)



• FRONT FORK ASSEMBLY

NOTE

Clean all parts by means of solvent and wipe off.

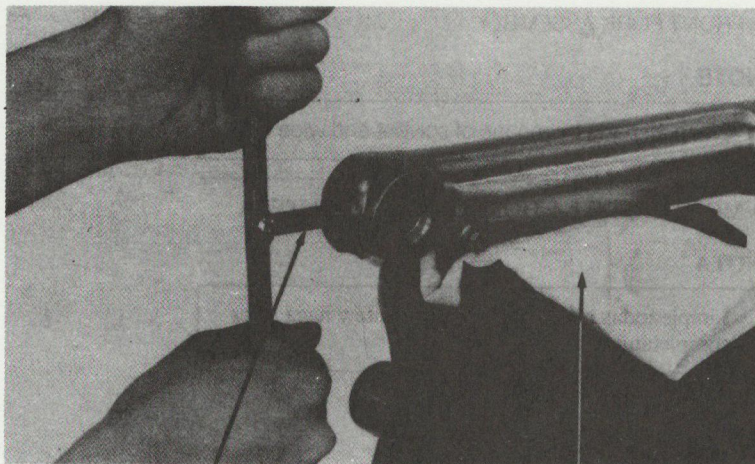


Install the piston and the fork tube.
Apply a locking agent to the bolt threads and underside of the bolt, then tighten it according to the specified torque.

TORQUE: 15—25 N.m (1.5—2.5 kg.m, 11—18 ft.lb)

NOTE

Do not tighten the fork bottom case excessively in a vise.

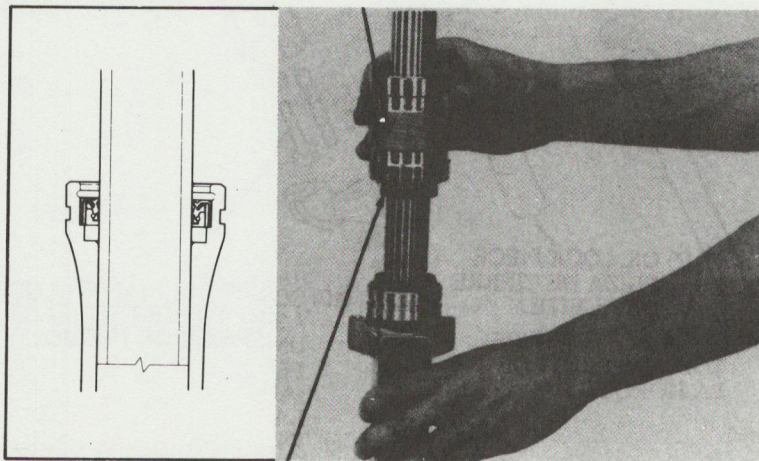


HOLLOW SET WRENCH (6mm)
07917-3230000

RAG OR SOFT JAWS

FORK OIL SEAL DRIVER BODY**• OIL SEAL INSTALLATION**

Drive the oil seal into position until the snap ring groove appears.
Install the snap ring and the dust cover.



FORK OIL SEAL ATTACHMENT

HONDA®

CB450N

FRONT WHEEL / SUSPENSION

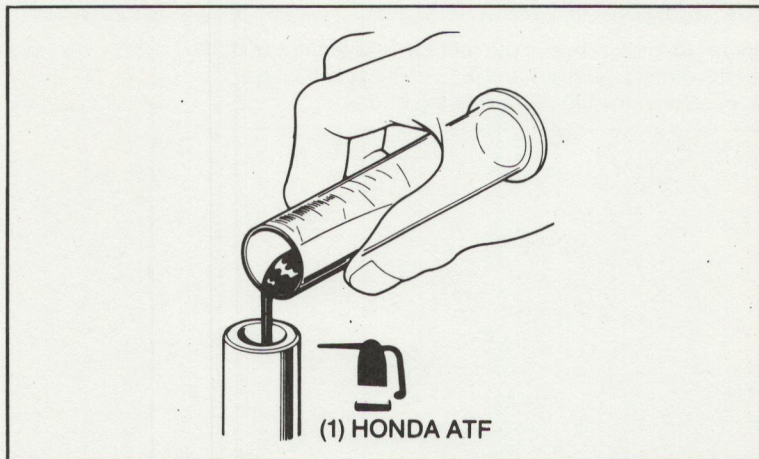
• FRONT FORK FILLING

Use ATF (Automatic Transmission Fluid) to fill the front fork.

NOTE

Pour the specified amount of ATF. Do not overfill.

OIL CAPACITY: 132.5—137.5 cc (4.4—4.6 ozs)



Slide the front fork spring and the O-ring into position and tighten the fork bolt.

TORQUE SPECIFICATION:
70—90 N.m (7.0—9.0 kg.m, 51—65 ft.lb)

NOTE

- Place the fork tube in soft jaws, avoiding the sliding surface.
- Install the fork spring with the tightly wound coils facing up.



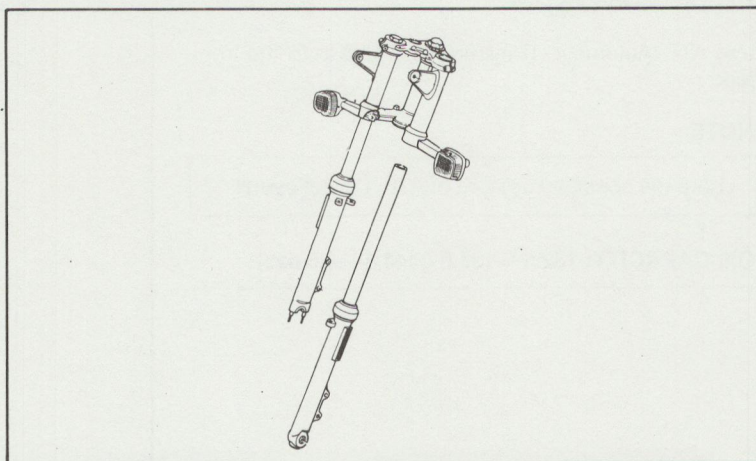
FORK BOLT

RAG OR SOFT JAWS

FRONT WHEEL / SUSPENSION

• FRONT FORK INSTALLATION

Install the fork tubes in the fork top and bottom bridges while rotating them by hand. Ensure that each tube end is aligned with the top of the fork top bridge.

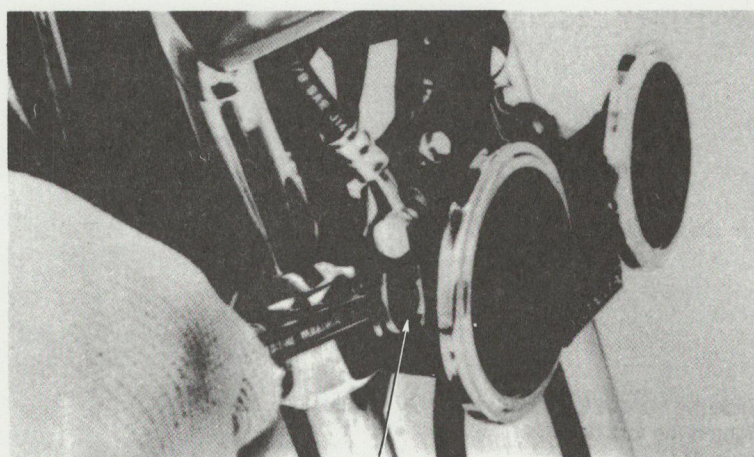


Tighten the bottom bridge bolt.

TORQUE: 30—40 N.m (3.0—4.0 kg.m, 22—29 ft.lb)

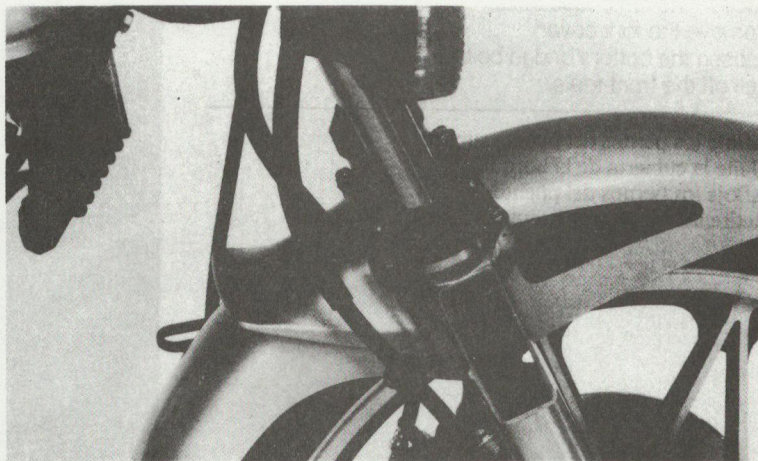
Tighten the top bridge bolt.

TORQUE: 30—40 N.m (3.0—4.0 kg.m, 22—29 ft.lb)



BOTTOM BRIDGE BOLT

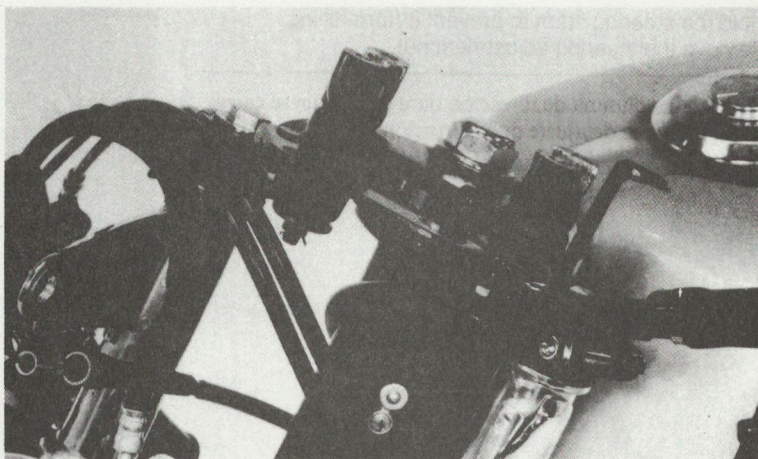
Install the front fender.
Install the brake calipers.
Secure the brake hose.
Install the front wheel.



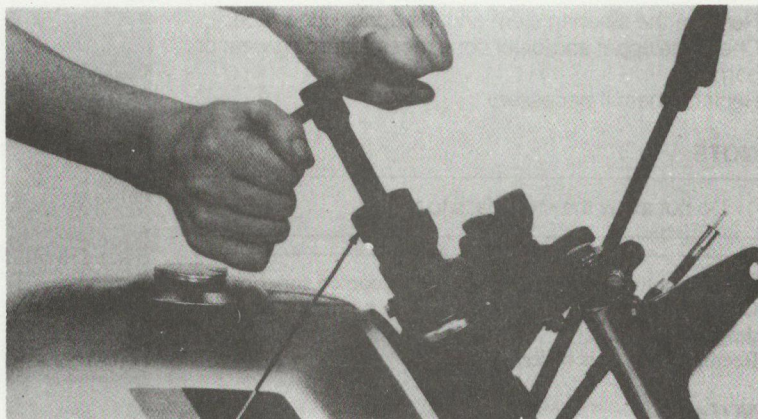
STEERING STEM

• FORK TOP BRIDGE REMOVAL

Remove the headlight.
Remove the instruments.
Remove the handlebars.



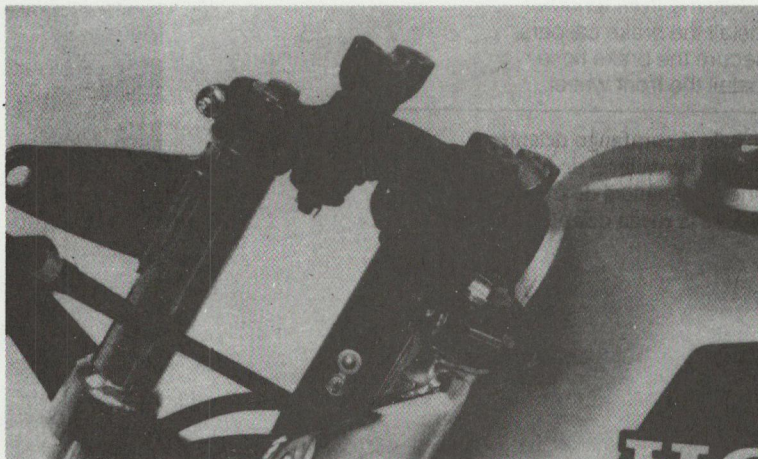
Unscrew the steering stem nut.



EXTENSION BAR 07716-0020500
LOCK NUT WRENCH SOCKET (30 x 32) 07716-0020400

FRONT WHEEL / SUSPENSION

Loosen the top bridge bolts.
Remove the fork cover.
Loosen the bottom bridge bolts.
Pull off the front forks.



Hold the steering stem to prevent it from falling.
Remove the steering adjustment nut.



STEERING ADJUSTMENT NUT

STEERING STEM SOCKET
07916-3710100

Remove the steering stem and the upper cone race.
Check the upper and lower cone races regarding wear or damage.
Replace them if necessary.

NOTE

Do not allow the steel balls to fall.

UPPER CONE RACE



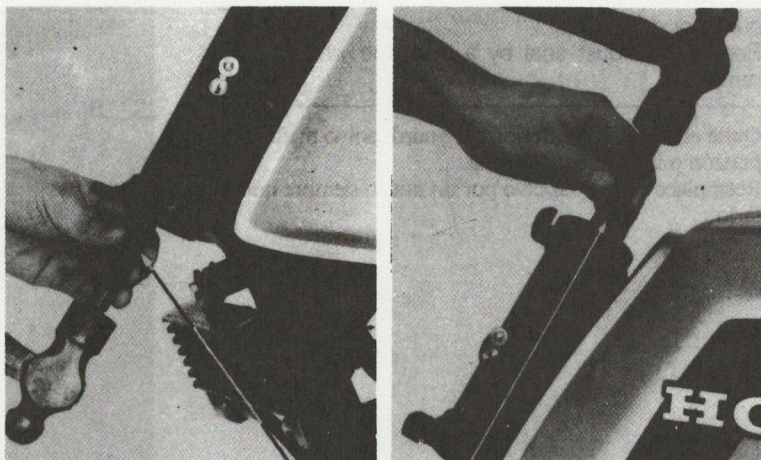
STEERING STEM

BEARING REPLACEMENT

Remove the upper ball race by means of the special tool.
Remove the lower ball race by means of the special tool.

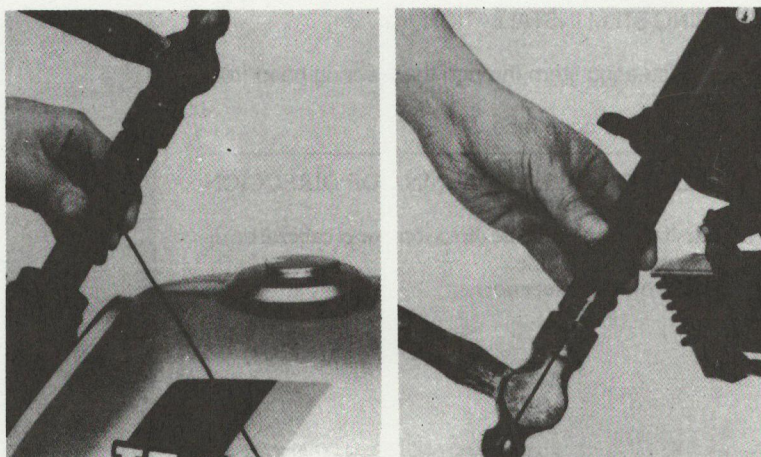
NOTE

If the motorcycle has been involved in an accident, examine the area around the steering head regarding cracks.



BALL RACE REMOVER 07953-3330000

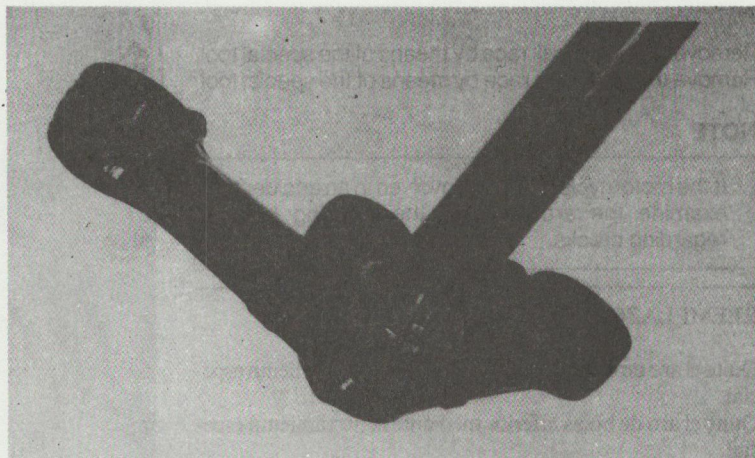
Drive the upper ball race into the steering head by means of the special tools.
Drive the lower ball race into the steering head.



BALL RACE DRIVER 07945-3330300
07046-3290100

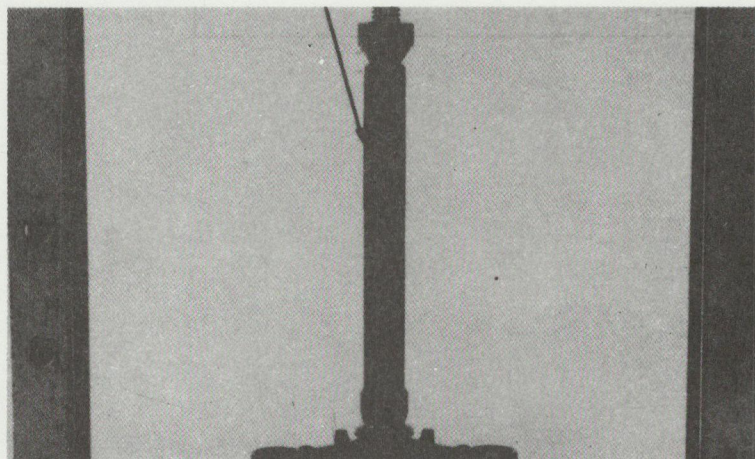
FRONT WHEEL / SUSPENSION

Remove the lower cone race and the dust seal using a punch or driver.
Replace the dust seal by a new one whenever it is removed.



STEERING STEM DRIVER 07946-MB00000

Install a dust seal and drive the lower cone race in by means of the steering stem driver.
Lubricate the races with grease and install the steel balls.



UPPER CONE RACE

STEERING STEM INSTALLATION

Slide the steering stem through the steering head from the bottom.
Install the upper cone race.



STEERING STEM

STEERING STEM SOCKET 07916-3710100

STEERING STEM ADJUSTMENT

Install the bearing adjustment nut and tighten it by means of the steering stem socket.

TORQUE: 1—2 N.m (0.1—0.2 kg.m, 0.7—1.4 ft.lb)

Turn the steering stem lock-to-lock five times to seat the bearings. Repeat the bearing tightening and steering stem turning sequence twice more.

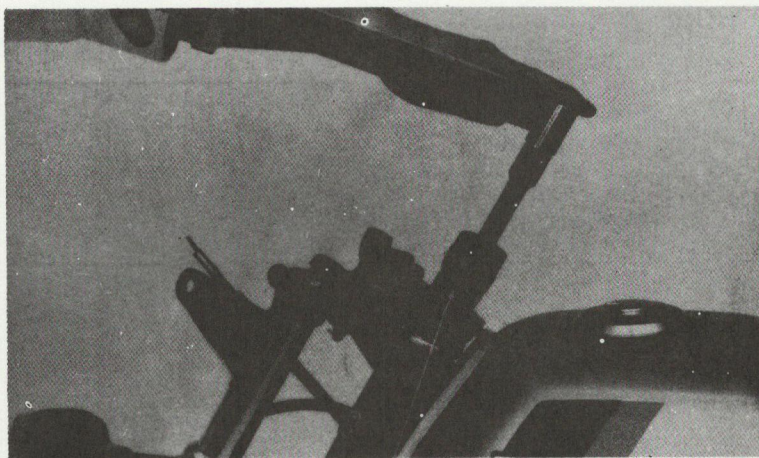


BEARING ADJUSTMENT NUT

FORK TOP BRIDGE INSTALLATION

Install the fork top bridge.
Install the front forks.
Tighten the steering stem nut.

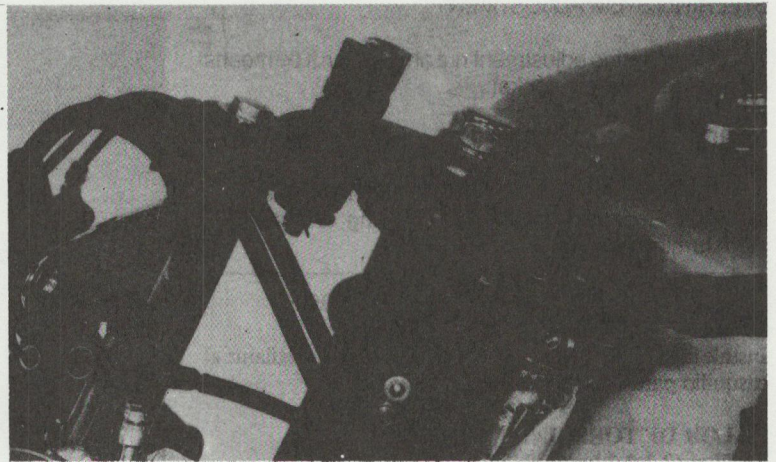
TORQUE: 90—120 N.m (9.0—12.0 kg.m, 65—87 ft.lb)

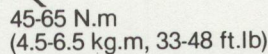


SOCKET WRENCH, 30 x 32 mm 07716-0020400

FRONT WHEEL / SUSPENSION

Install the fender.
Install the front wheel.
Install the brake calipers.





13. REAR WHEEL/ SUSPENSION

HONDA®
CB450N

SERVICE INFORMATION	13-1
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FINAL DRIVEN SPROCKET	13-5
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REAR SHOCK ABSORBER	13-10
SWINGARM	13-13

SERVICE INFORMATION

• WORKING PRACTICE

This section describes inspection and repair of the rear wheel and the suspension. Handle the rim with care since it is made of aluminum alloy.

• SPECIAL TOOLS

Common Tools

BEARING DRIVER HANDLE (A)	07749-0010000	BEARING REMOVER SHAFT	07746-0051000
BEARING DRIVER OUTER (42 x 47 mm)	07746-0010300	BEARING REMOVER HEAD (20 mm)	07746-0050600
BEARING DRIVER OUTER (52 x 55 mm)	07746-0010400	BEARING DRIVER OUTER (62 x 68 mm)	07746-0010500
BEARING DRIVER PILOT (20 mm)	07746-0040500	BEARING DRIVER PILOT (25 mm)	07746-0040600
BEARING DRIVER PILOT (17 mm)	07746-0040400		
REAR SHOCK ABSORBER SPRING COMPRESSOR	07959-3290001		

• SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Axle bend		—	0.2 mm(0.008 in)
Rear wheel runout	Radial	—	2.0 mm(0.08 in)
	Axial	—	2.0 mm(0.08 in)
Final driven sprocket I.D.		65.00—65.09 mm(2.560—2.563 in)	65.16 mm(0.565 in)
Rear wheel hub O.D. (L)		64.94—64.97 mm(2.557—2.558 in)	64.87 mm(2.554 in)
Rear cushion spring free length		208.3 mm (8.20 in)	198.0 mm(7.80 in)

TROUBLESHOOTING

Wobble or vibration in motorcycle

1. Distorted rim
2. Loose wheel bearing
3. Loose or distorted spokes
4. Faulty tire
5. Loose axle

Soft suspension

1. Weak spring
2. Shock absorbers improperly adjusted
3. Weak rear damper

Hard suspension

1. Shock absorbers improperly adjusted

Suspension noise

1. Shock absorber case binding
2. Loose fasteners

REAR WHEEL REMOVAL/ DISASSEMBLY/ASSEMBLY

• REAR WHEEL REMOVAL

Support the motorcycle on the center stand.

Loosen the drive chain adjusting bolts.

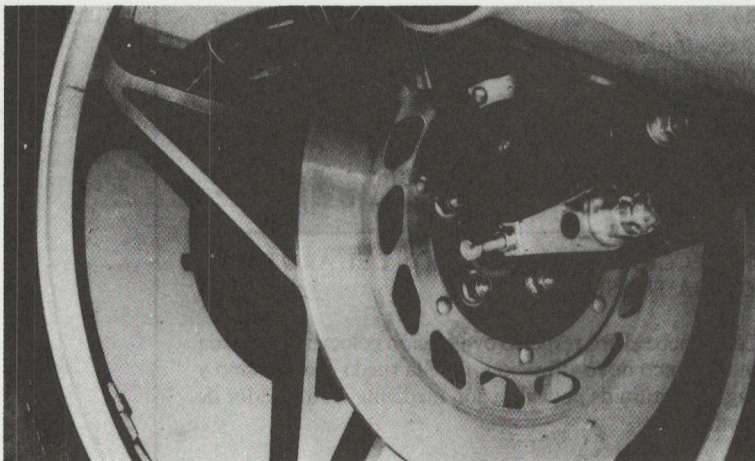
Remove the nut and rear wheel axle.

Push the wheel forward and put out the drive chain from the driven sprocket.

Remove the rear wheel

NOTE

Do not operate the brake pedal after removing the rear wheel. It will cause the brake pads closing, difficulting the installation of the wheel.

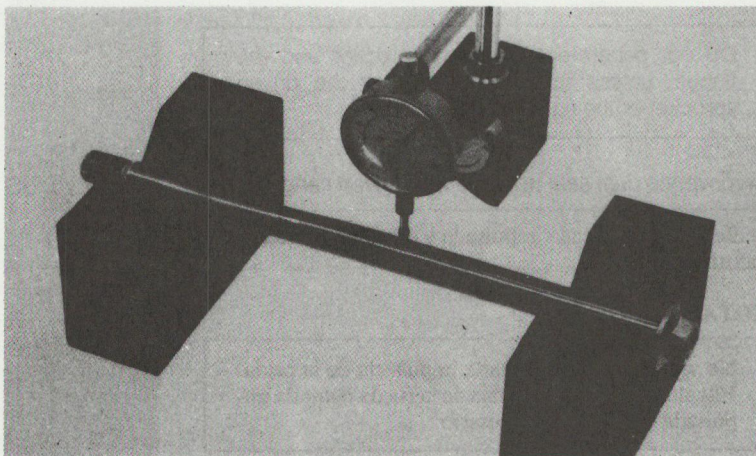


• AXLE SHAFT BEND INSPECTION

Set the axle in V blocks and read the axle bend.

The actual axle bend is 1/2 of TIR (Total Indicator Reading).

SERVICE LIMIT: 0.2 mm (0.008 in)



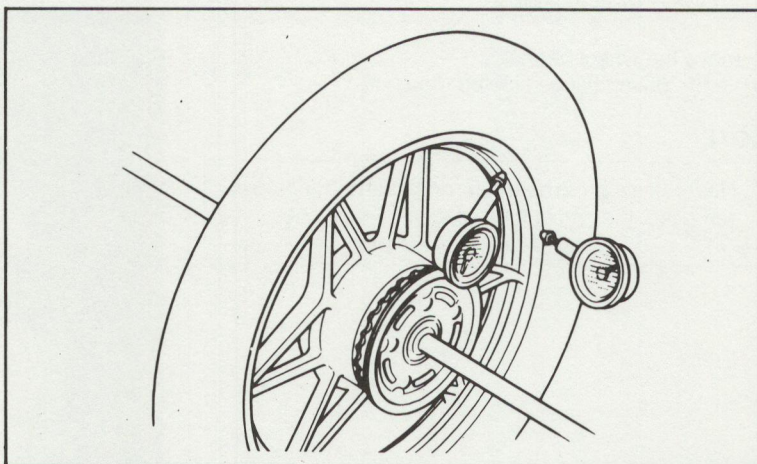
- REAR WHEEL RIM RUNOUT INSPECTION

Check the rim regarding runout by placing the wheel in a truing stand. Spin the wheel by hand and read the runout using a dial indicator gauge.

SERVICE LIMITS:

RADIAL RUNOUT: 2.0 mm (0.08 in)

AXIAL RUNOUT: 2.0 mm (0.08 in)

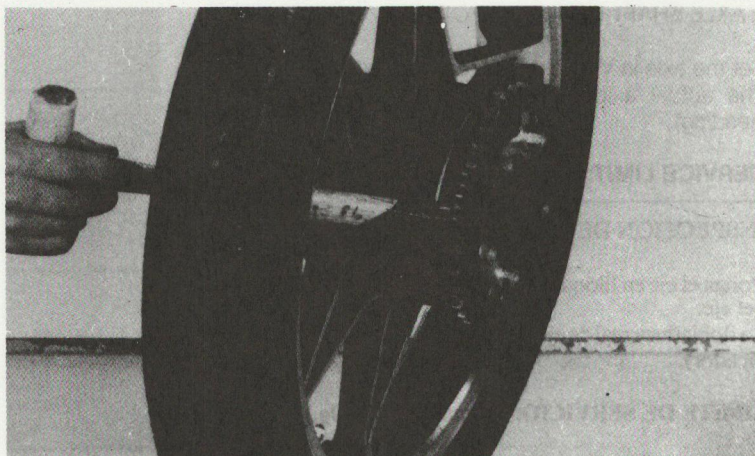


Remove the final driven sprocket and the driven flange together.

NOTE

Do not separate the driven sprocket and the flange, unless the replacement of the driven sprocket or the flange is necessary.

Remove the dust seal from the final driven flange.



REAR WHEEL / SUSPENSION

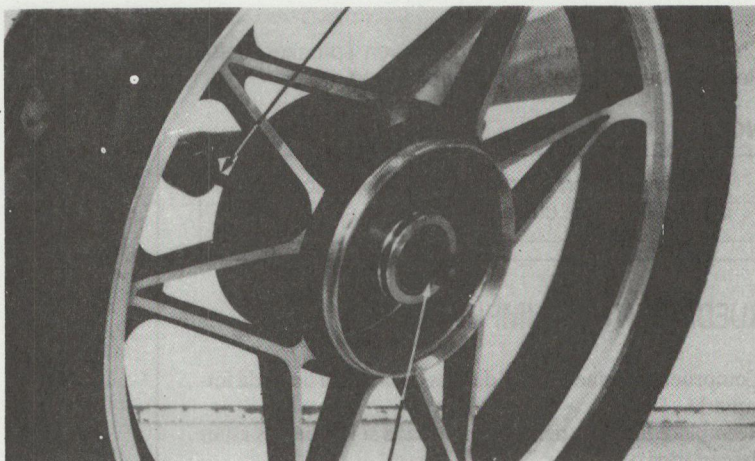
BEARING REMOVER SHAFT 0746-0550100

• BEARING REPLACEMENT

Remove the wheel bearings.
Drive the driven flange side bearing out.

NOTE

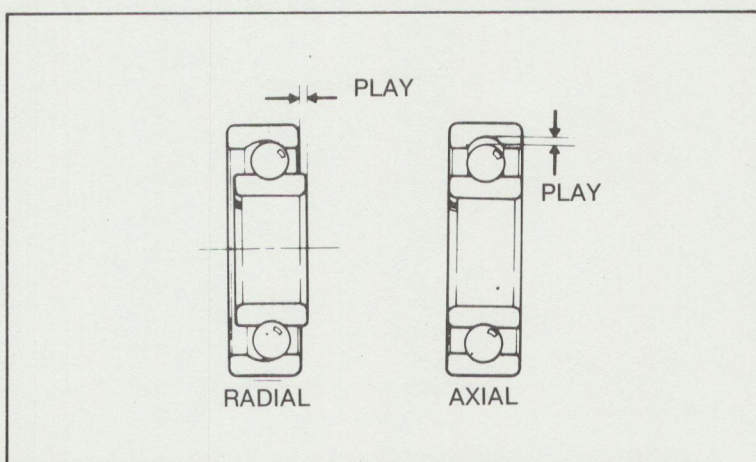
Never reinstall old bearings; once the bearings are removed, they must be replaced by new ones.



BEARING REMOVER HEAD, 20 mm 0746-0050600

• REAR WHEEL BEARING PLAY INSPECTION

Check the wheel bearing play by rotating the wheel by hand. Replace the bearings by new ones if they are noisy or have excessive play.

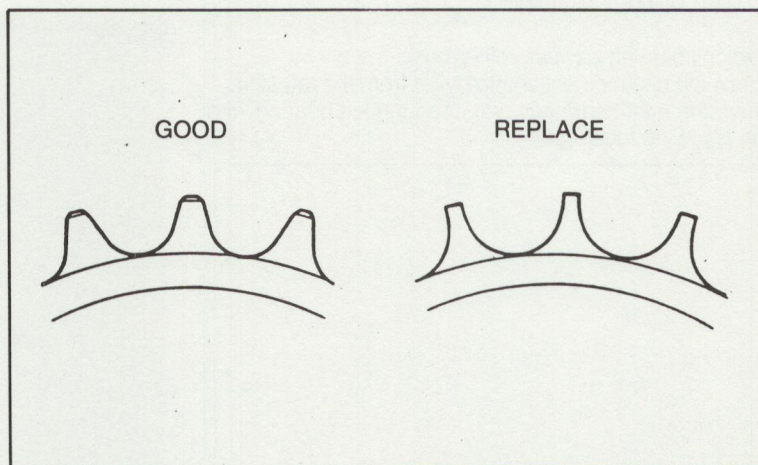


FINAL DRIVEN SPROCKET

Check the condition of the final driven sprocket teeth.
Replace the sprocket if worn or distorted.

NOTE

If the final driven sprocket requires replacement,
inspect the drive chain and the drive sprocket.



• DAMPER RUBBER INSPECTION

Replace the damper rubbers if they are damaged or
deteriorated.



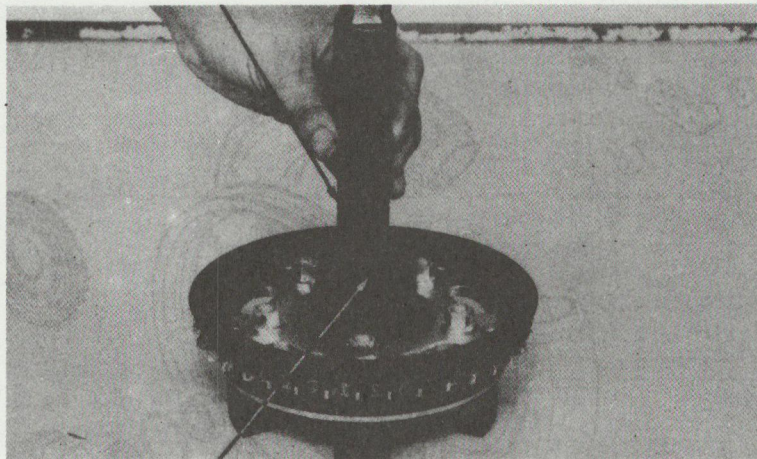
DAMPER RUBBER

REAR WHEEL / SUSPENSION

BEARING DRIVER HANDLE (A)

• REAR WHEEL ASSEMBLY

Pack all bearing cavities with grease.
Press the distance collar into place from the left side.
Drive the right bearing in first, then the left bearing with the following tools.

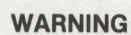


BEARING DRIVER OUTER AND PILOT

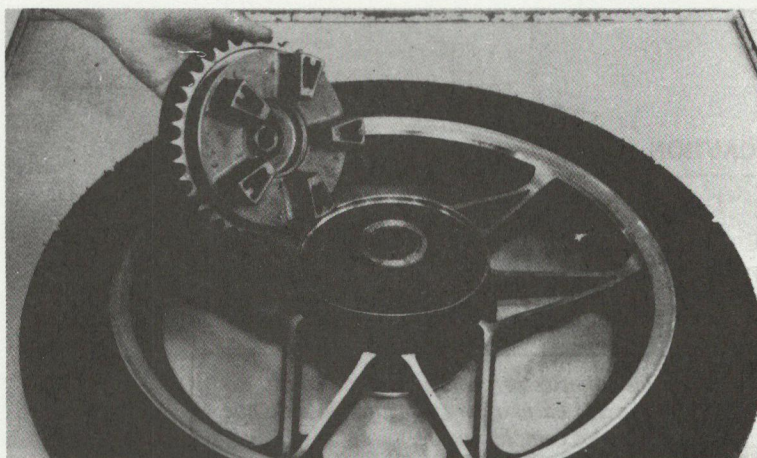
Drive the driven flange bearing in by means of the following tools.

CAUTION

Drive the bearings in squarely with the sealed end facing out, making sure they are fully seated.



Install the damper rubber and the final driven flange with the driven sprocket.



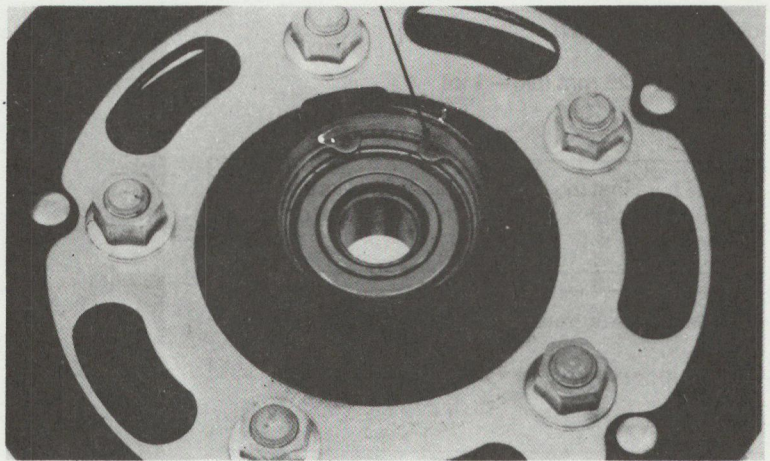
REAR WHEEL / SUSPENSION

If the driven sprocket has been removed from the flange, tighten the driven sprocket nuts according to the specified torque.

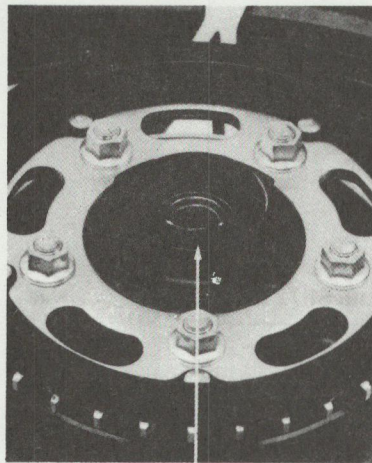
TORQUE: 60—70 N.m (6.0—7.0 kg.m, 43—51 ft.lb)

Install the snap ring in its place.

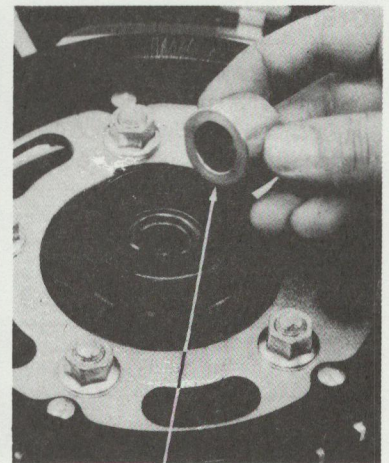
SNAP RING



Install the dust seal and the side collar.



DUST SEAL



COLLAR

REAR WHEEL INSTALLATION

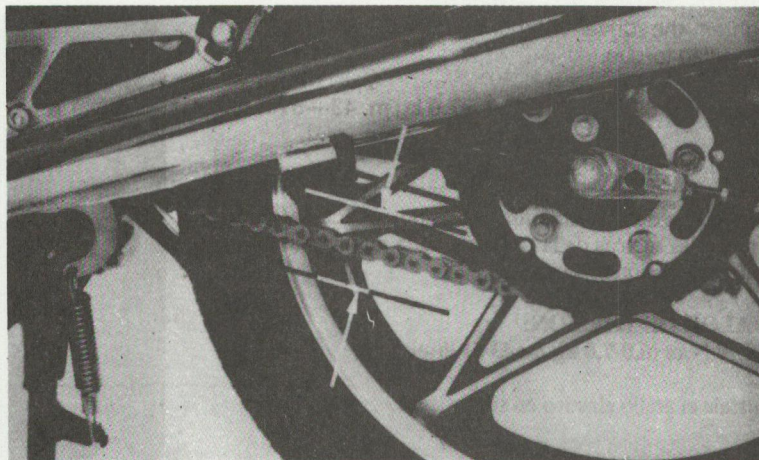
Install the rear wheel in the reverse order of removal.
Hold the brake caliper up and install the wheel.
Install the caliper over the disc carefully not to damage the brake pads.

Install the drive chain on the driven sprocket.
Adjust the drive chain slack.

SLACK: 15—25 mm (5/8—1 in)

NOTE

Make sure that the same alignment marks on both adjusting plates align with the ends of the swingarm.

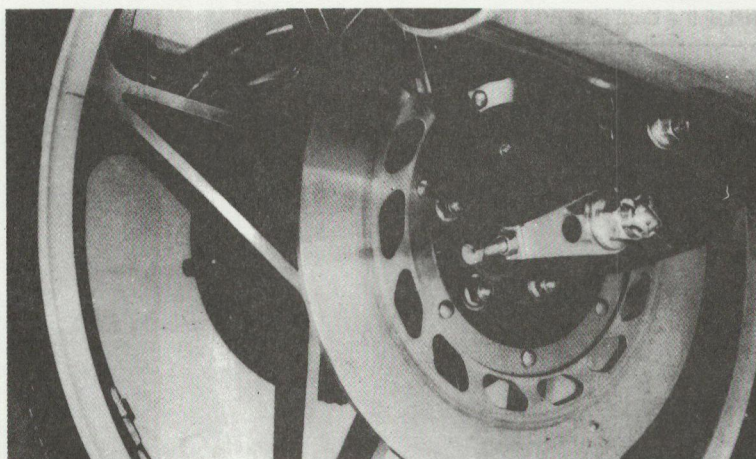


NOTE

- After installing the wheel, apply the brake several times. Then check that the wheel rotates freely. Recheck wheel installation if the brake drags or if the wheel does not rotate freely.

Tighten the rear axle nut.

TORQUE: 70—100 N.m (7.0—10.0 kg.m, 51-72 ft.lb)



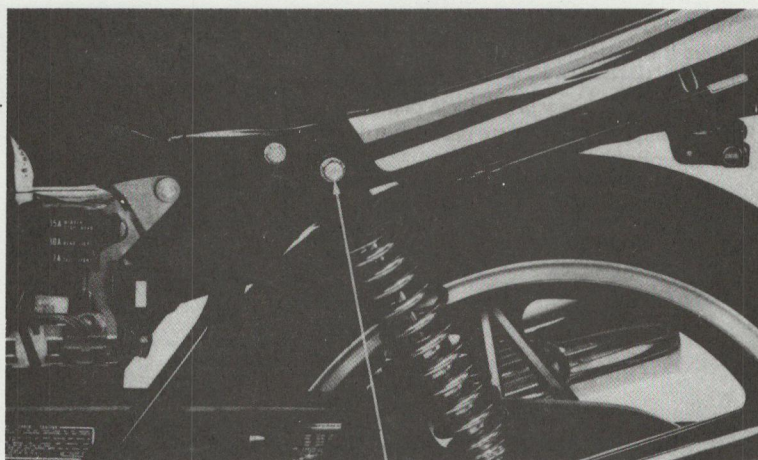
REAR SHOCK ABSORBER

• REAR SHOCK ABSORBER REMOVAL

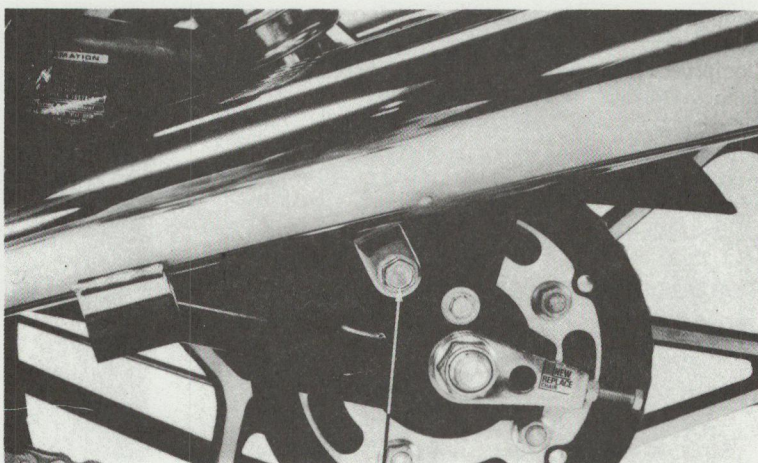
Remove both upper mounting bolts first slowly down the rear wheel on the ground, and then remove the lower mounting bolts. Remove the shock absorbers.

NOTE

Before removing the shock absorbers rotate the adjuster to the weakest position.



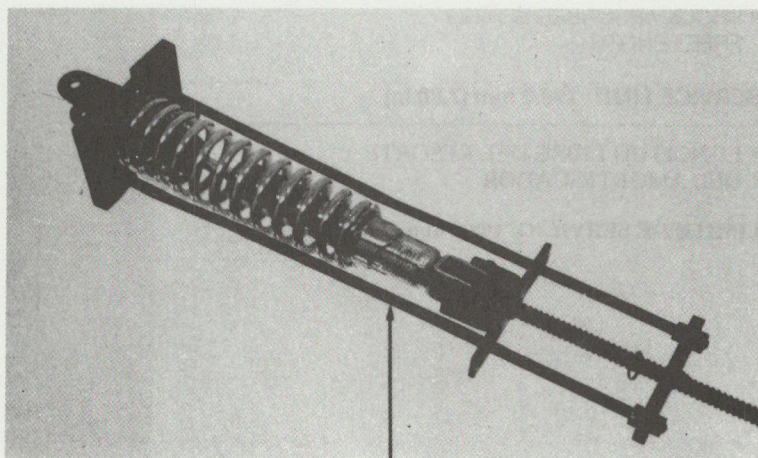
UPPER MOUNTING BOLT



LOWER MOUNTING BOLT

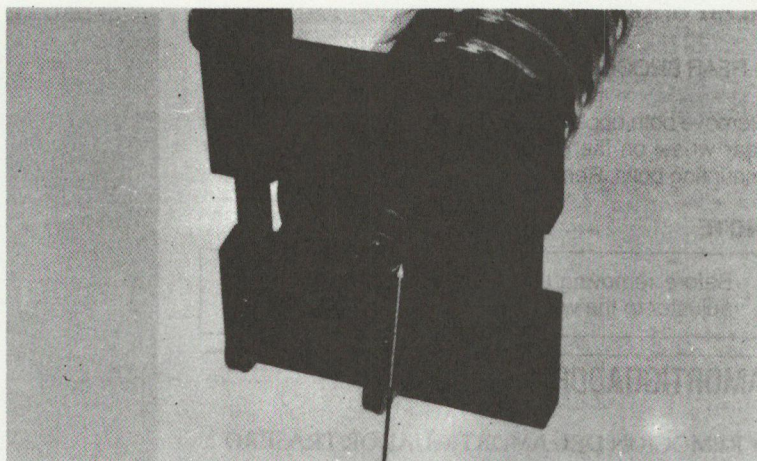
• SHOCK ABSORBER DISASSEMBLY

Compress the shock absorber by means of the shock absorber spring compressor.



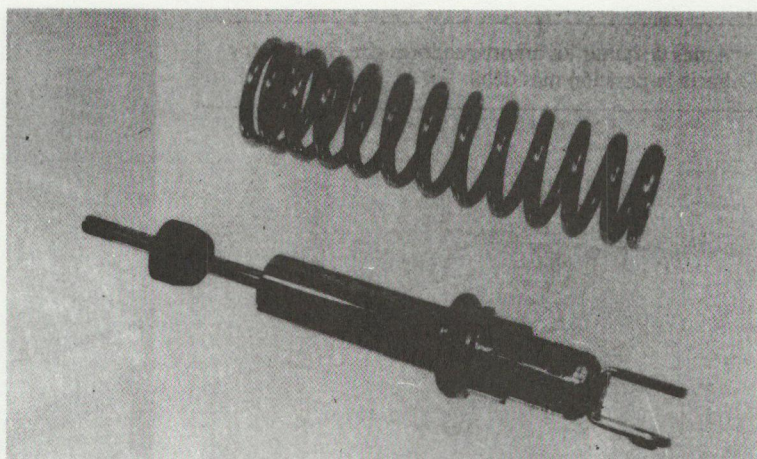
REAR SHOCK ABSORBER SPRING COMPRESSOR

Remove the lock nut and the plain washer.
Remove the shock absorber spring compressor.
Remove the upper joint and the spring.



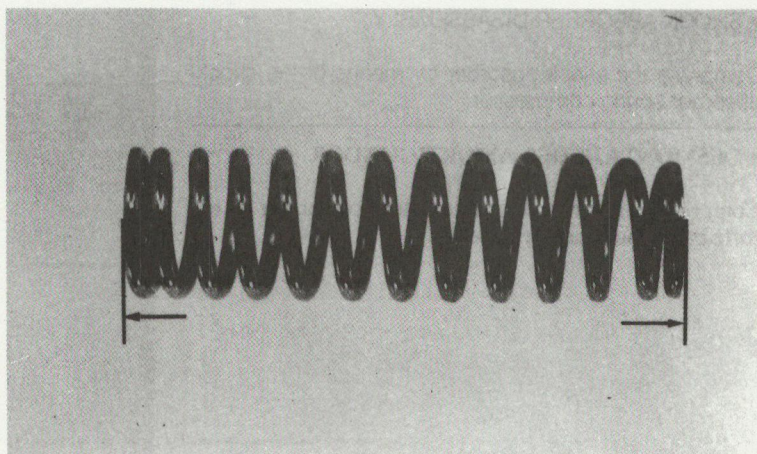
LOCK NUT

Check the damper unit regarding wear or damage.



- SHOCK ABSORBER SPRING
FREE LENGTH

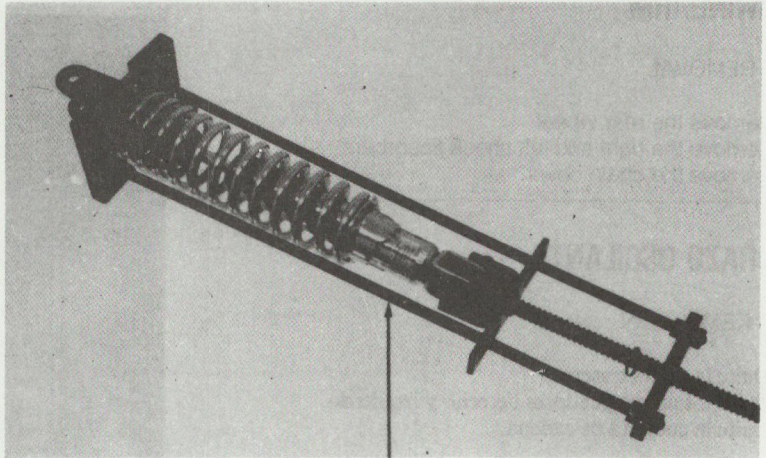
SERVICE LIMIT: 198.0 mm (7.80 in)



REAR WHEEL / SUSPENSION

• REAR SHOCK ABSORBER ASSEMBLY

Compress the spring until the slotted end of the rod contacts the upper joint.
Applying the end of a screwdriver to the rod slot, turn the rod into the upper joint fully.
Install the lock nut and tighten it securely.



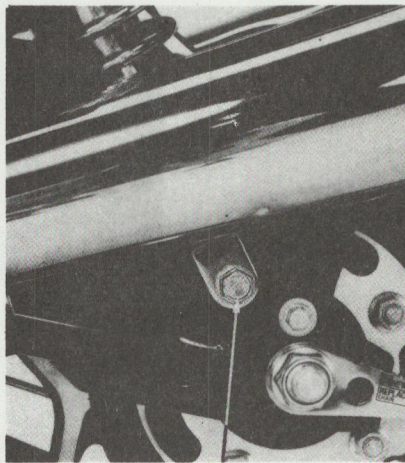
REAR SHOCK ABSORBER SPRING COMPRESSOR

• SHOCK ABSORBER
INSTALLATION

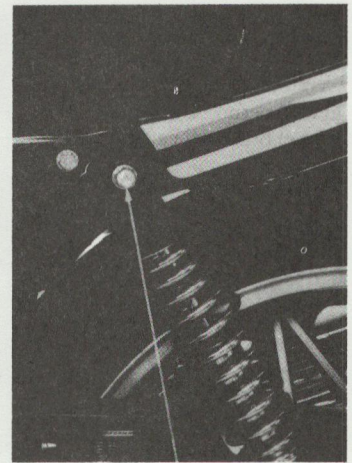
To install the shock absorber, tighten the lower bolts first, raise the rear wheel and tighten the upper bolts.

TORQUE SPECIFICATION:
30—40 N.m (3.0—4.0 kg.m, 22—29 ft.lb)

Adjust the shock absorber spring by means of the spring adjuster.



LOWER MOUNTING BOLT

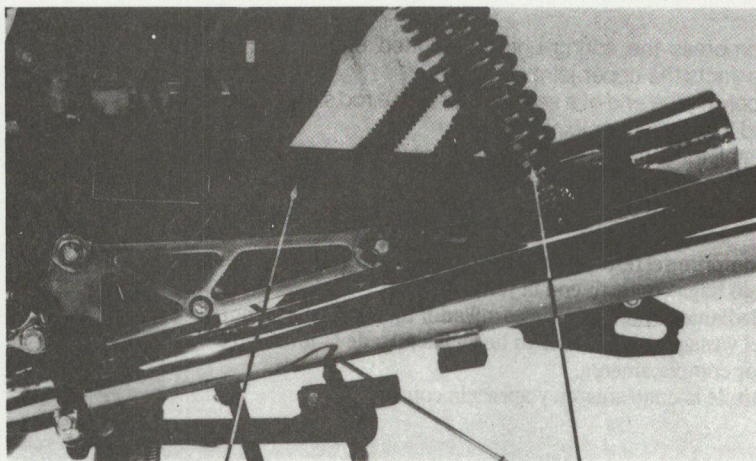


UPPER MOUNTING BOLT

SWINGARM

• REMOVAL

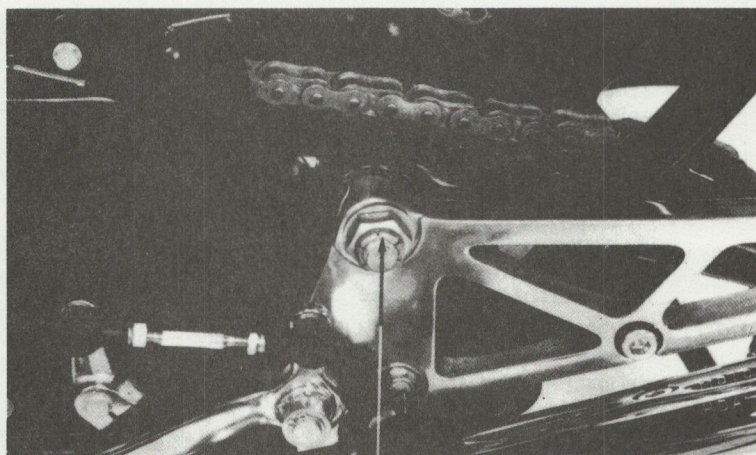
Remove the rear wheel.
Remove the right and left shock absorbers.
Remove the chain cover.



CHAIN COVER

REAR SHOCK ABSORBER

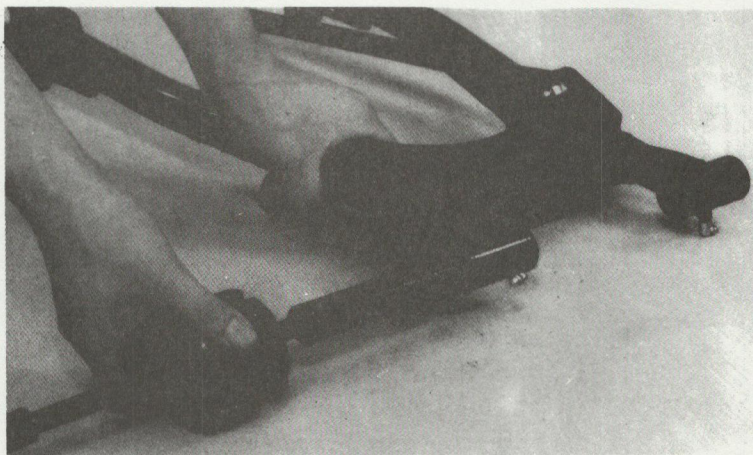
Remove the swingarm pivot bolt.
Remove the swingarm.



PIVOT BOLT/NUT

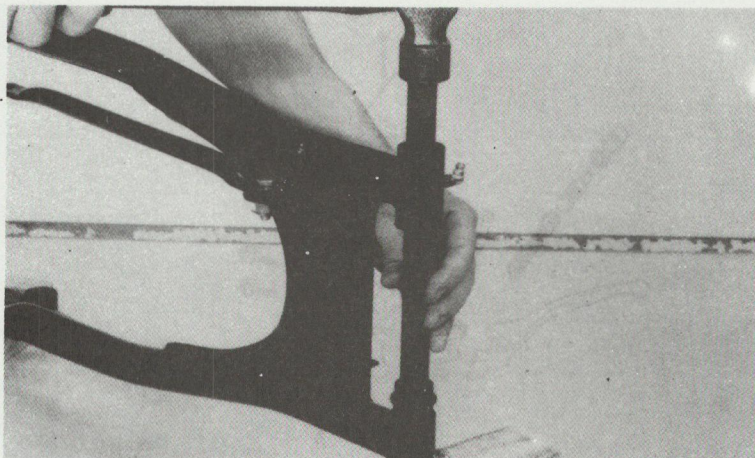
• SWINGARM PIVOT BUSHINGS

Check the swingarm bushings regarding wear or damage.
If the bushings are excessively worn, replace them as follows:
Drive out the bushings by means of the bearing remover set (07936—3710001).



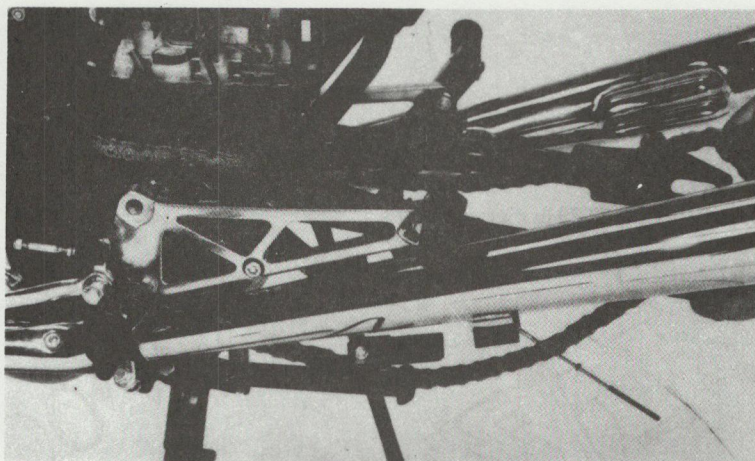
REAR WHEEL / SUSPENSION

Drive new bushings into place making sure that they are not damaged.
Lubricate the bushings with grease after installation.



• INSTALLATION

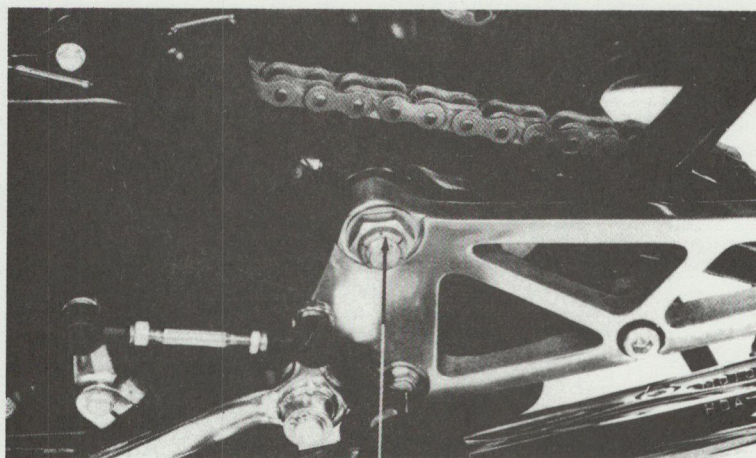
Install the swingarm in the frame body and insert the pivot bolt.



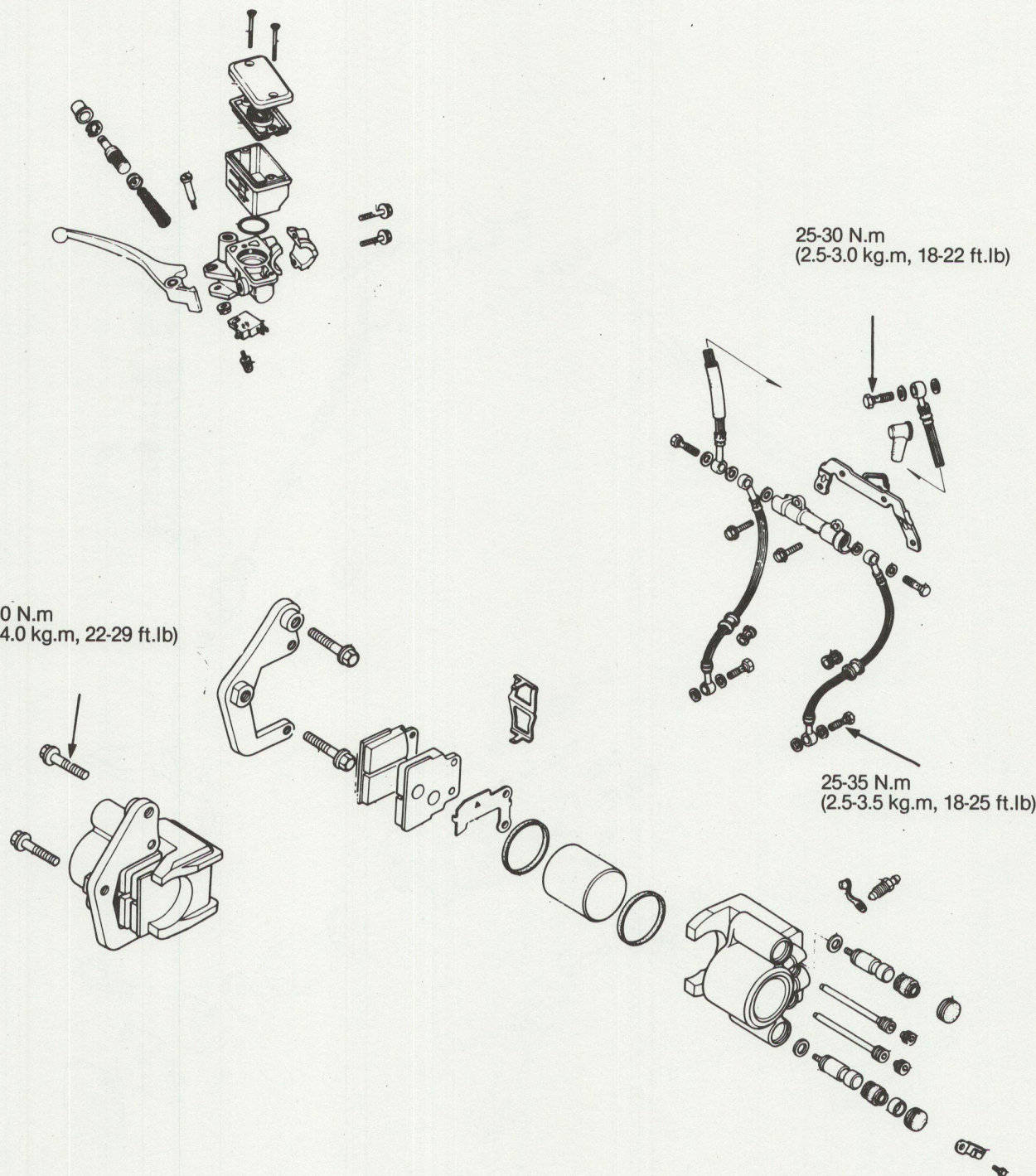
Tighten the swingarm pivot bolt.

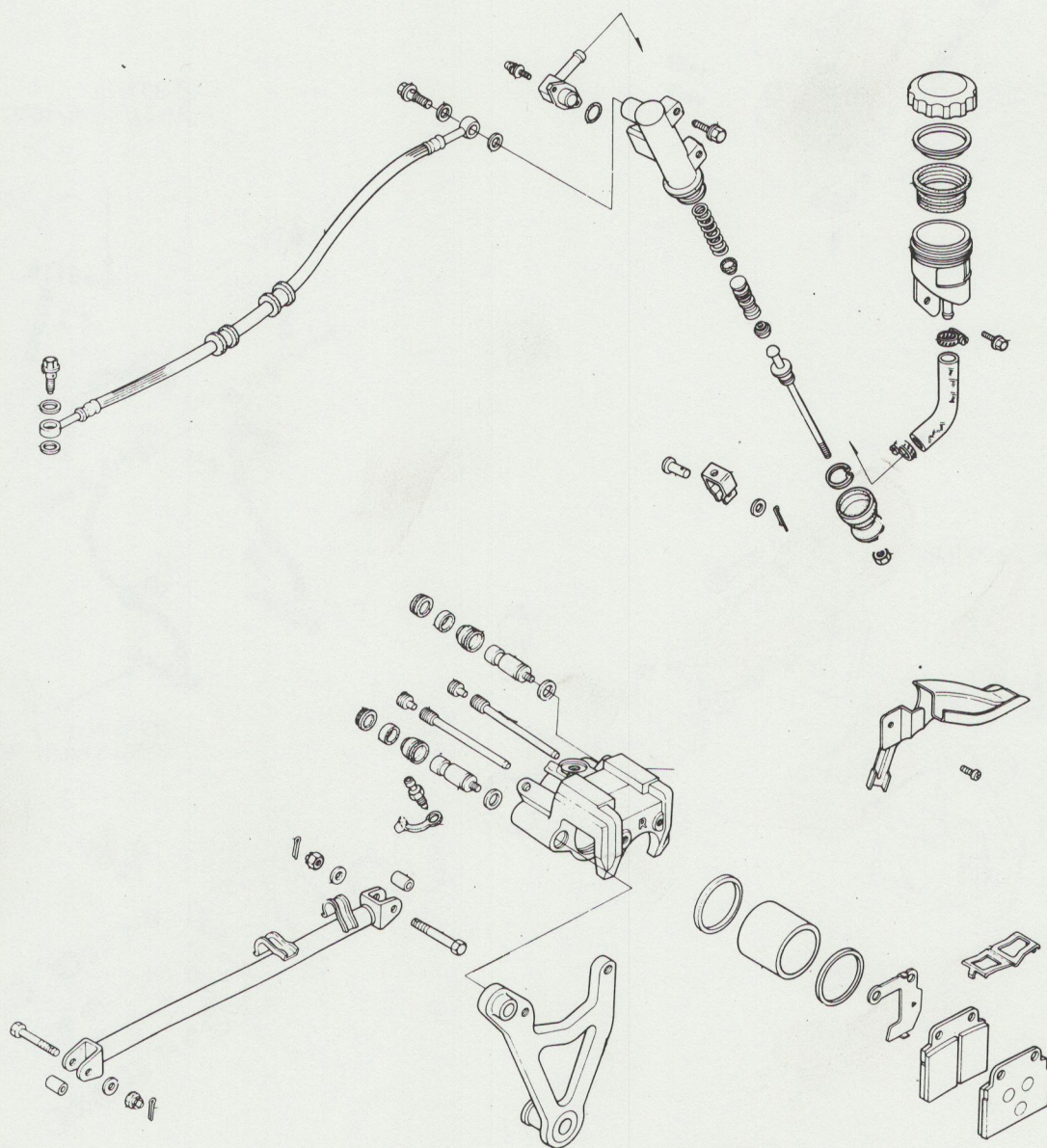
TORQUE: 60—80 N.m (6.0—8.0 kg.m, 43—58 ft.lb)

Install the shock absorbers.
Install the rear wheel.



PIVOT BOLT/NUT





SERVICE INFORMATION	14—1
TROUBLESHOOTING	14—2
BRAKE FLUID REPLACEMENT/AIR BLEEDING	14—3
BRAKE PAD/DISC	14—6
MASTER CYLINDER	14—10
BRAKE CALIPERS	14—17

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The brake calipers can be removed without disconnecting the hydraulic system.
- Bleed the hydraulic system if it is disassembled or if the brake feels spongy.
- Do not allow foreign material to enter the system when filling the reservoir.
- Avoid spilling brake fluid on painted surfaces or instrument lenses as severe damage can result.
- Always check brake operation before riding the motorcycle.

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT
Front disc thickness	4.8—5.2 mm (0.19—0.20 in)	4.0 mm (0.16 in)
Front disc runout	—	0.30 mm (0.012 in)
Front master cylinder I.D.	15.870—15.913 mm (0.6248—0.6265 in)	15.93 mm (0.627 in)
Front master piston O.D.	15.827—15.854 mm (0.6231—0.6242 in)	15.82 mm (0.623 in)
Front caliper piston O.D.	38.115—38.180 mm (1.5006—1.5031 in)	38.11 mm (1.500 in)
Front caliper cylinder I.D.	38.180—38.200 mm (1.5031—1.5039 in)	38.22 mm (1.505 in)
Rear master cylinder I.D.	14.000—14.043 mm (0.5511—0.5528 in)	14.055 mm (0.5533 in)
Rear master piston O.D.	13.957—13.984 mm (0.5494—0.5505 in)	13.945 mm (0.5490 in)
Rear caliper piston O.D.	38.098—38.148 mm (1.4999—1.5018 in)	38.090 mm (1.4996 in)
Rear caliper cylinder I.D.	38.180—38.230 mm (1.5031—1.5051 in)	38.240 mm (1.5055 in)
Rear disc thickness	4,8—5,2 mm (0.19—0,20 in)	4,0 mm (0.16 in)
Rear disc runout	—	0,3 mm (0.012 in)

SPECIAL TOOL

Snap ring pliers 07914—3230001

TORQUE VALUES

Brake hose bolt	25—35 N.m (2.5—3.5 kg.m, 18—25 ft.lb)
Front drain bolt	4—7 N.m (0.4—0.7 kg.m, 3—5 ft.lb)
Front brake disc	27—33 N.m (2.7—3.3 kg.m, 19—24 ft.lb)
Front caliper bracket	30—40 N.m (3.0—4.0 kg.m, 22—29 ft.lb)
Front brake caliper shaft	25—30 N.m (2.5—3.0 kg.m, 18—22 ft.lb)
Rear brake disc	27—33 N.m (2.7—3.3 kg.m, 19—24 ft.lb)
Rear brake caliper shaft	20—25 N.m (2.0—2.5 kg.m, 14—18 ft.lb)
Rear master cylinder	20—25 N.m (2.0—2.5 kg.m, 14—18 ft.lb)

TROUBLESHOOTING

Soft or spongy brake lever action

1. Air bubbles in hydraulic system
2. Low fluid level
3. Hydraulic system leaking

Too hard brake lever action

1. Sticking piston
2. Clogged hydraulic system
3. Glazed pads or pads worn excessively

Brakes drag

1. Hydraulic system sticking
2. Sticking piston

Brake grabs or pulls to one side

1. Contaminated pads
2. One side of front brake is faulty
3. Misaligned disc or wheel

Brake chatters or squeals

1. Contaminated pads
2. Excessive disc runout
3. Caliper installed incorrectly
4. Misaligned disc or wheel

BRAKE FLUID REPLACEMENT/AIR BLEEDING

Check the fluid level with the fluid reservoir parallel to the ground.

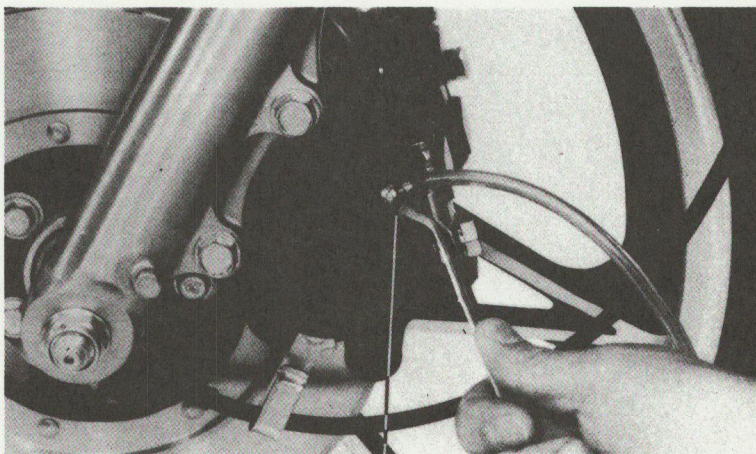
CAUTION

- *Install the diaphragm on the reservoir when operating the brake lever. Failure to do so will allow brake fluid to squirt out of the reservoir during brake operation.*
- *Avoid spilling fluid on painted surfaces. Place a rag over the fuel tank whenever the system is serviced.*



• **BRAKE FLUID DRAINING**

Connect a bleed hose to the bleed valve. Loosen the caliper bleed valve and pump the brake lever. Stop operating the lever when fluid stops flowing out of the bleed valve.



BLEED VALVE

HYDRAULIC BRAKE

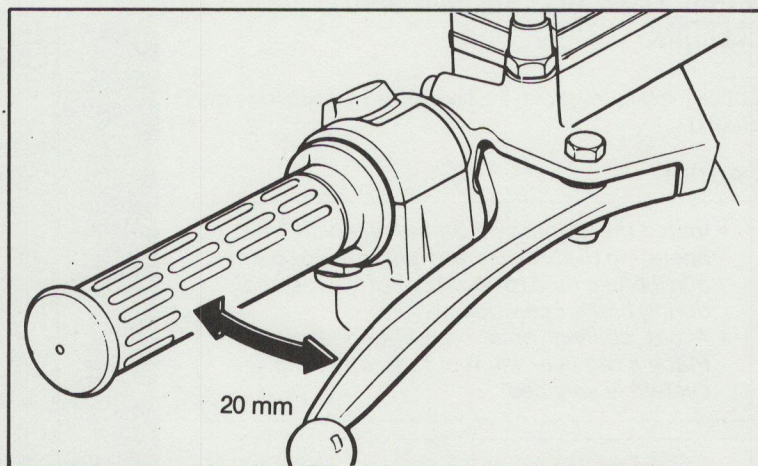
• BRAKE FLUID FILLING

NOTE

Do not mix different types of fluid since they are not compatible.

Close the bleed valve, fill the reservoir, and install the diaphragm.

To prevent piston overtravel and brake fluid seepage, keep a 20 mm (3/4 in) spacer between the throttle grip and the brake lever when bleeding the front brake system. Pump up the system pressure with the lever until there are no air bubbles in the fluid flowing out of the reservoir small hole and lever resistance is felt.



• AIR BLEEDING

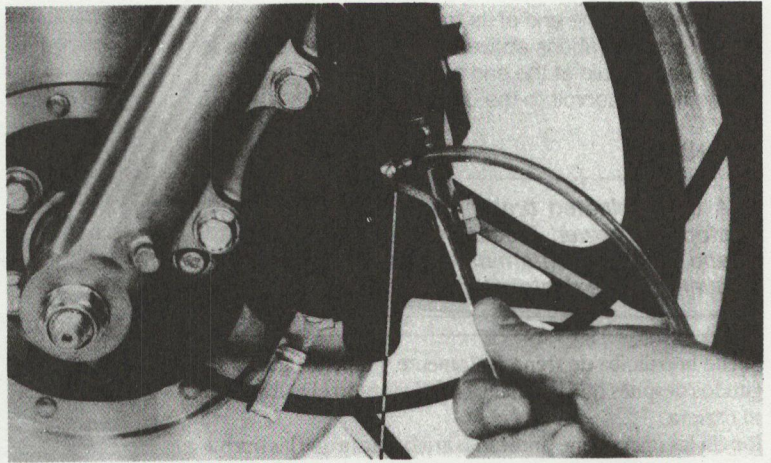
NOTE

- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.
- Use DOT-3 or DOT-4 brake fluid from a sealed container.
- Do not mix different types of fluid and never reuse the contaminated fluid which has been pumped out during brake bleeding, because this will impair the efficiency of the brake system.

Apply the brake lever, open the bleed valve 1/2 turn and then close the valve.

NOTE

Do not release the brake lever until the bleed valve has been closed again.



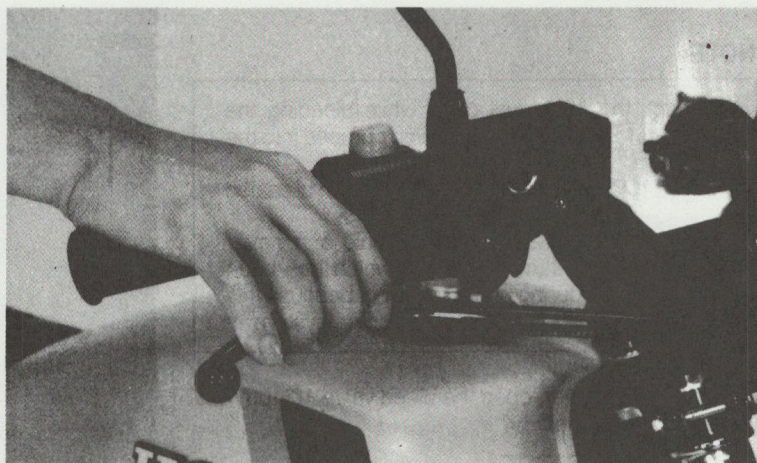
BLEED VALVE

HYDRAULIC BRAKE

Release the brake lever slowly and wait several seconds after it reaches the end of its travel.
Repeat the operations above until the bubbles cease to appear in the fluid at the end of the hose.
Fill the fluid reservoir to the upper level mark.

WARNING

A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.



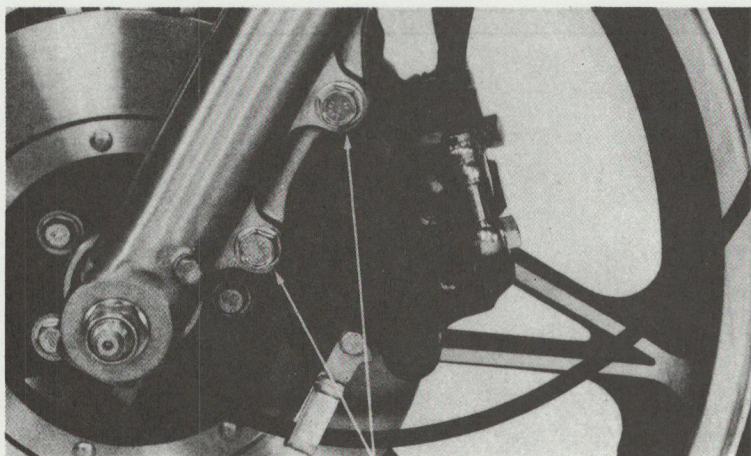
BRAKE PAD/DISC

FRONT BRAKE PAD REPLACEMENT

NOTE

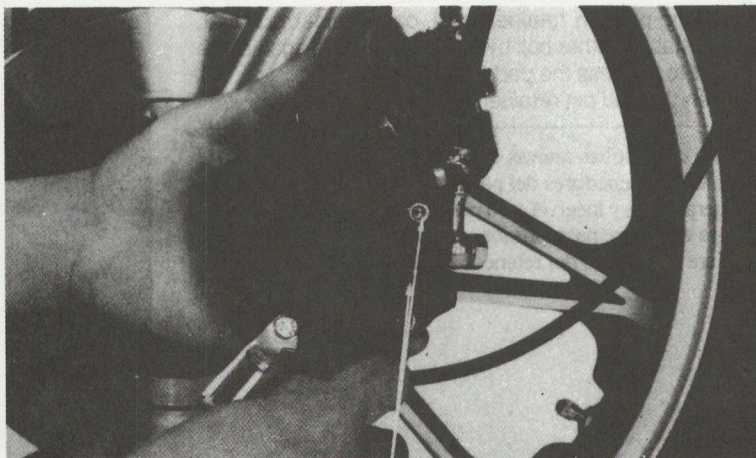
Always replace the brake pads as a set to assure even disc pressure.

Remove the caliper.



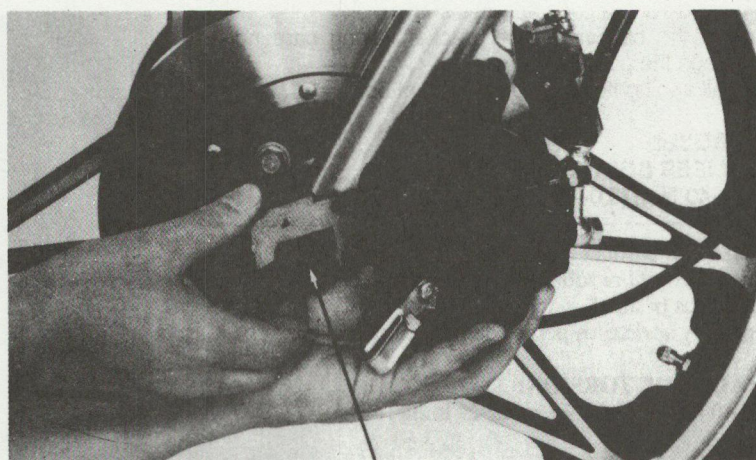
CALIPER BOLT

Remove the pad pin retainer bolts and pull them out of the caliper.



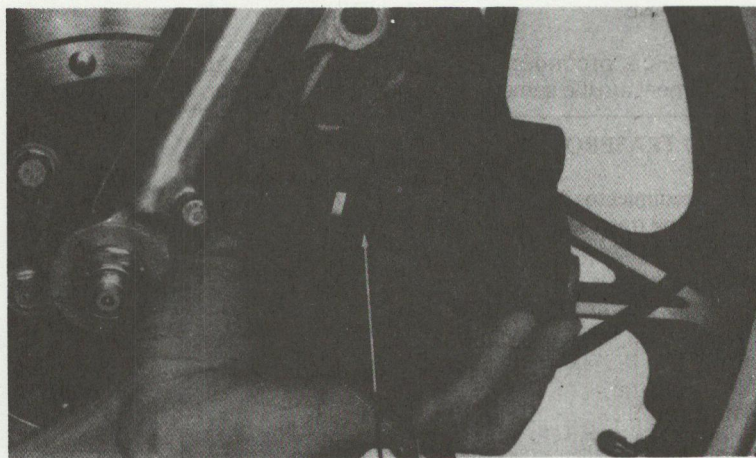
RETAINER BOLTS

Remove the brake pads.



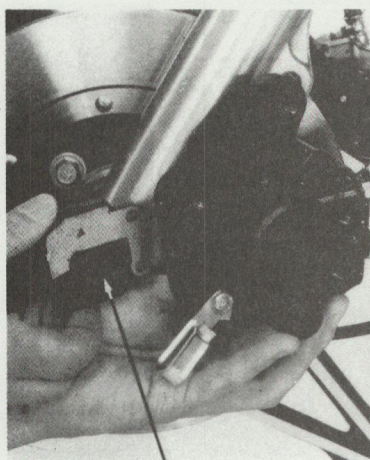
BRAKE PAD

Position the pad spring in the caliper as shown and push the caliper pistons in all the way.

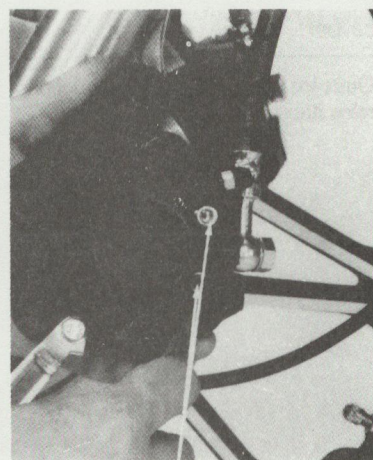


PAD SPRING

Install new pads in the caliper.
Install the pad pin retainer bolts, one retainer bolt first, then install the other bolt by pushing the pads against the caliper to depress the pad spring.
Tighten the pad pin retainer bolts.



BRAKE PAD

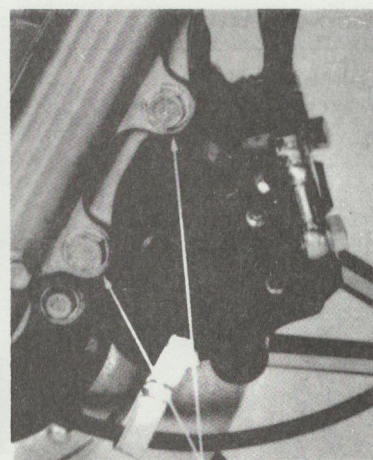
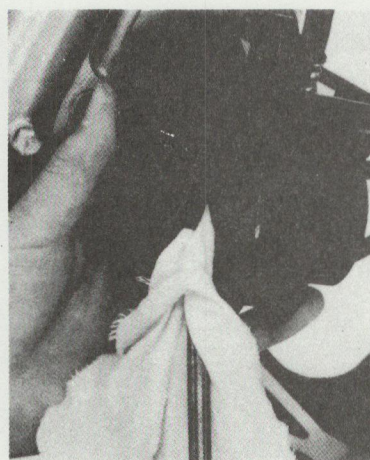


PAD PIN RETAINER BOLTS

Place the brake pads apart as shown.
Install the caliper on the bracket, taking care not to damage the pads.
Install and tighten the caliper mount bolts.

TORQUE:**CALIPER BOLT:**

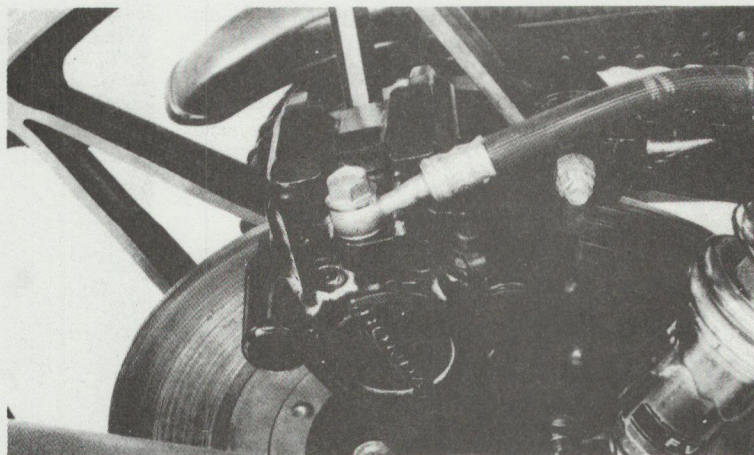
30—40 N.m (3.0—4.0 kg.m, 22—29 ft.lb)



CALIPER MOUNT BOLTS

REAR BRAKE

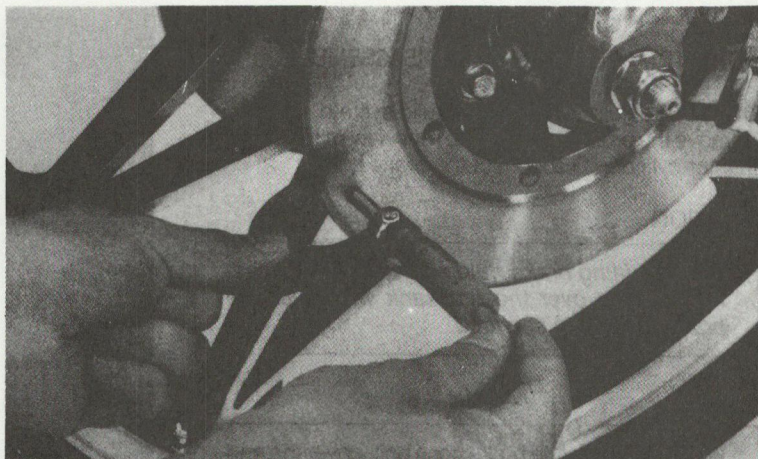
The service procedures to the rear brake pad replacement are the same described to the front caliper.



- DISC THICKNESS

Measure the thickness of each disc.

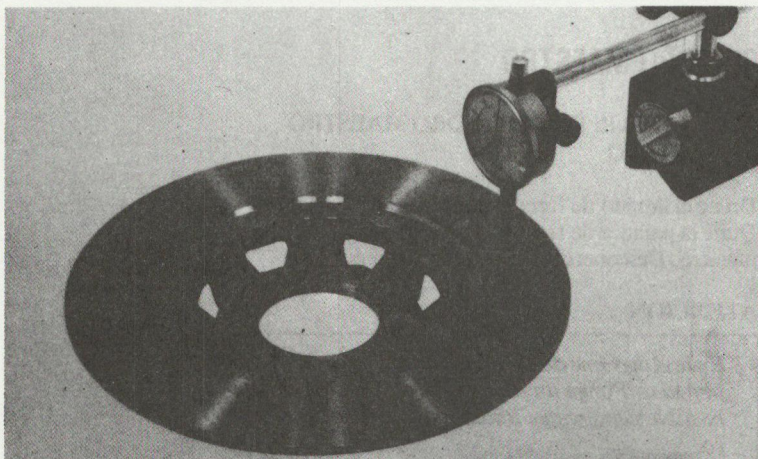
SERVICE LIMIT: 4.0 mm (0.16 in)



- BRAKE DISC WARPAGE

Measure the brake disc regarding warpage.

SERVICE LIMIT: 0.30 mm (0.012 in)



MASTER CYLINDER**• FRONT MASTER CYLINDER DISASSEMBLY**

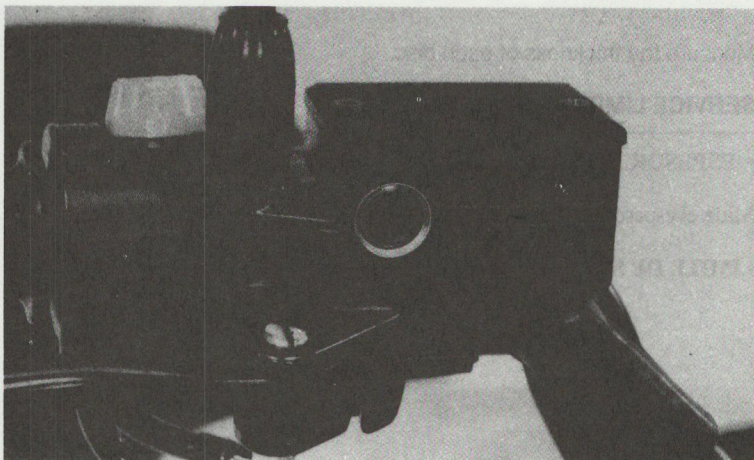
Drain brake fluid from the hydraulic system.
Remove the brake lever and the rear view mirror from the master cylinder. Disconnect the brake hose.

CAUTION

*Avoid spilling brake fluid on painted surfaces.
Place a rag over the fuel tank whenever the
brake system is serviced.*

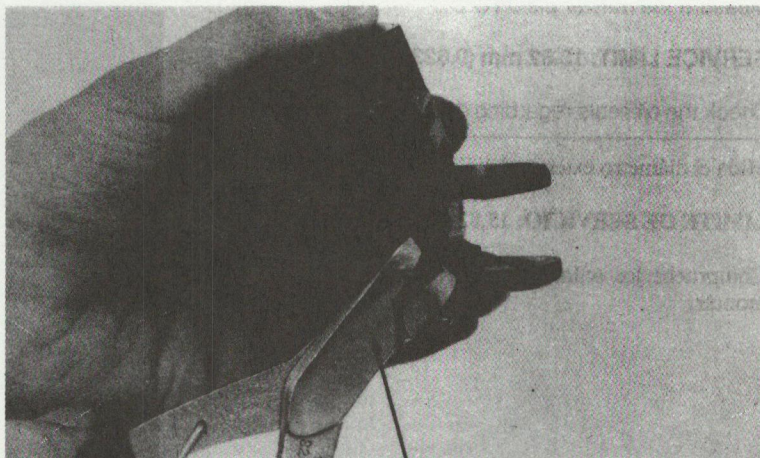
NOTE

When removing the brake hose bolt, cover the end of the hose to prevent contamination. Secure the hose to prevent fluid from leaking out.



Remove the master cylinder.

Remove the piston boot and the circlip from the master cylinder body.



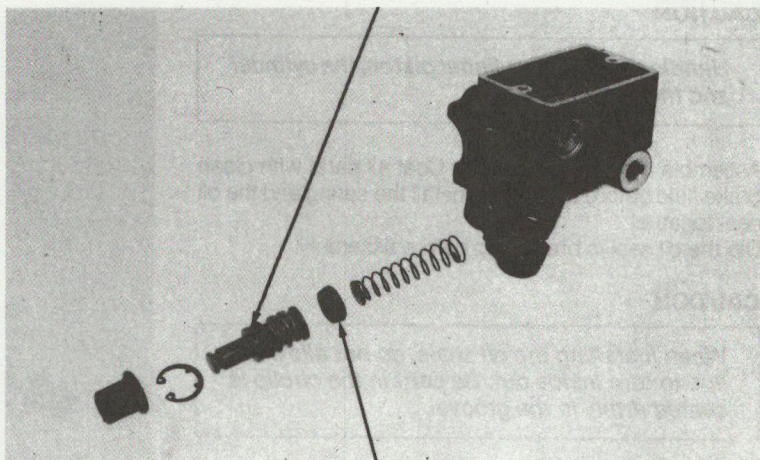
SNAP RING PLIERS

PISTON

Remove the piston. Then remove the oil seal and the spring.

Remove the stoplight switch from the master cylinder body, if necessary.

Clean the inside of the master cylinder and the reservoir with brake fluid.



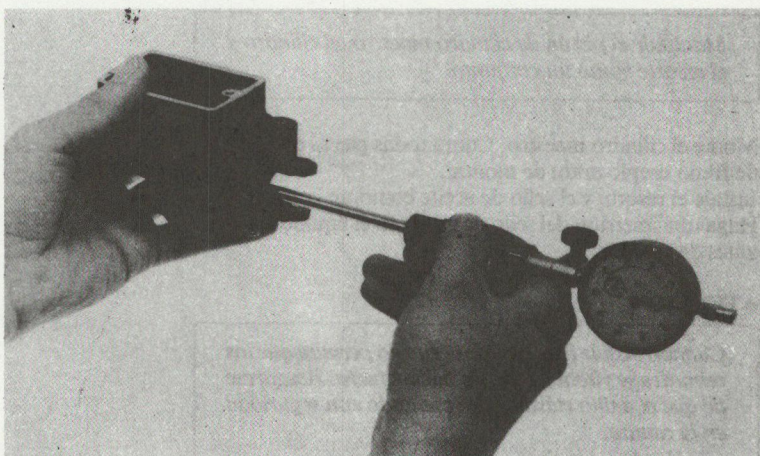
OIL SEAL

• MASTER CYLINDER I.D. INSPECTION

Check the master cylinder regarding scores, scratches or nicks.

Measure the master cylinder I.D..

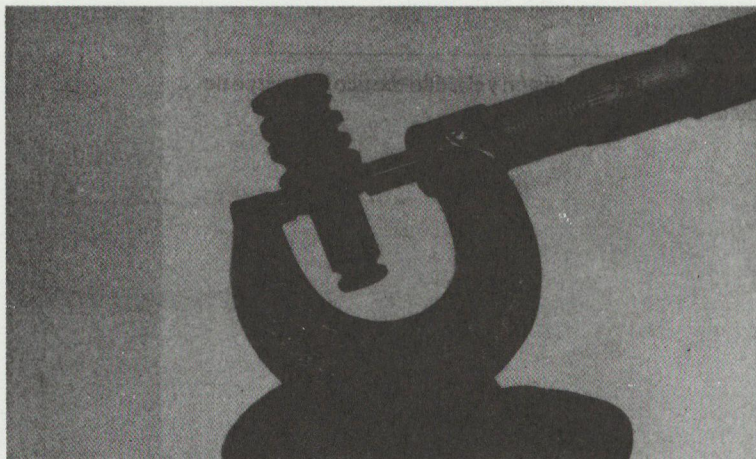
SERVICE LIMIT: 15.93 mm (0.627 in)



Measure the master piston O.D..

SERVICE LIMIT: 15.82 mm (0.623 in)

Check the oil seals regarding damage before assembly.



• MASTER CYLINDER ASSEMBLY

CAUTION

Handle the master cylinder piston, the cylinder and the spring as a set.

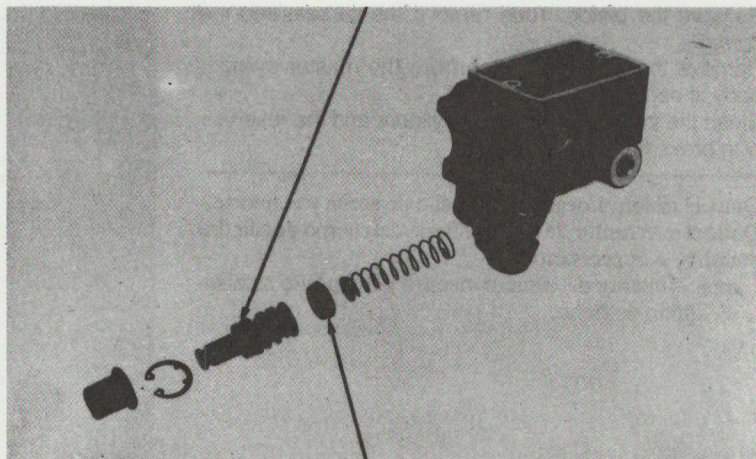
Assemble the master cylinder. Coat all parts with clean brake fluid before assembly. Install the spring and the oil seal together. Dip the oil seal in brake fluid before assembly.

CAUTION

When installing the oil seals, do not allow the lips to turn inside out. Be certain the circlip is seated firmly in the groove.

Install the piston, the clip and the boot.

PISTON

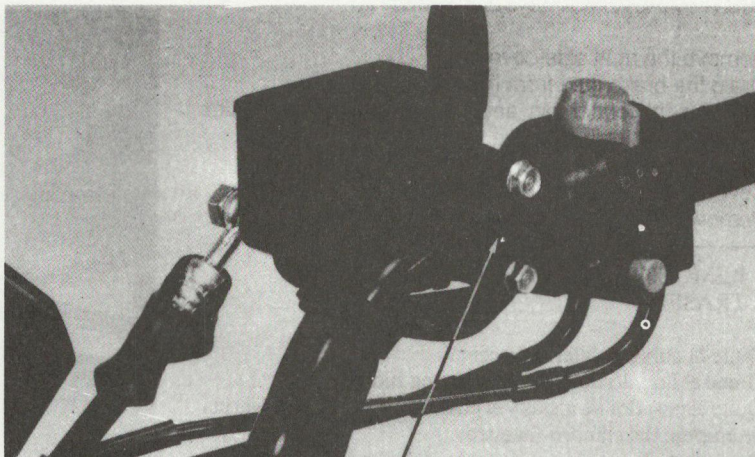


OIL SEAL

Place the master cylinder on the handlebar and install the holder by means of two mounting bolts. Tighten the top bolt first.

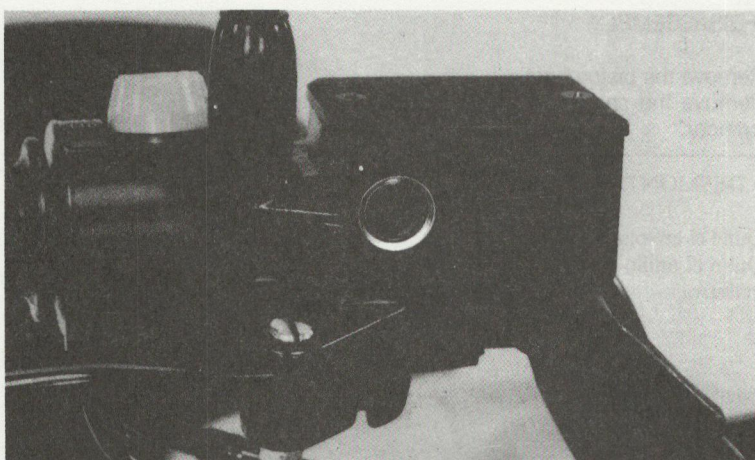
Install the brake hose by means of the bolt and its two sealing washers.

Install the brake lever.



MASTER CYLINDER HOLDER

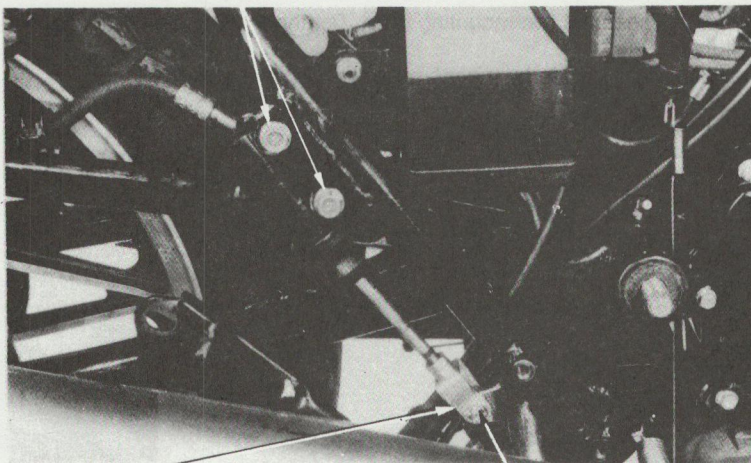
Fill the reservoir to the upper level mark and bleed the brake system according to page 14-5.



MASTER CYLINDER BOLTS

• REAR MASTER CYLINDER REMOVAL

Remove the right side cover.
Drain the brake fluid from hydraulic system.
Remove the cotter pin and joint pin from the master cylinder push rod.
Disconnect the brake hose from the master cylinder.
Cover the end of hose to prevent contamination.
Remove the master cylinder.

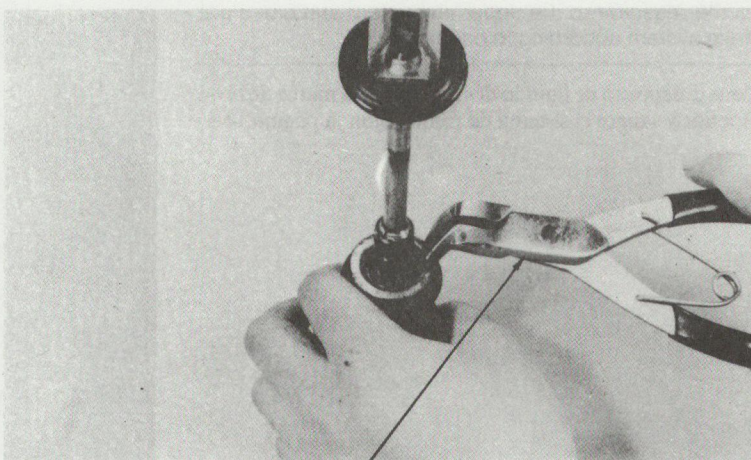


COTTER PIN

JOINT PIN

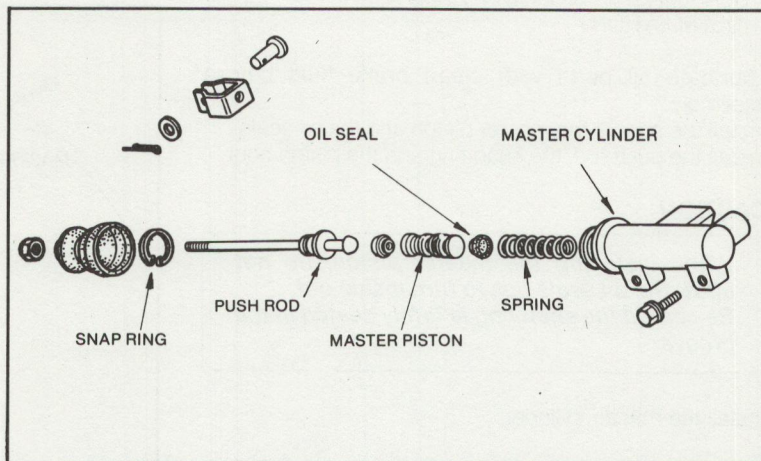
• DISASSEMBLY

Remove the piston boot.
Remove the snap ring and push rod from the master cylinder.



SNAP RING PLIERS

Remove the master piston, the oil seal and the master cylinder spring, applying a small amount of air pressure to the fluid outlet. Clean all parts with the brake fluid.

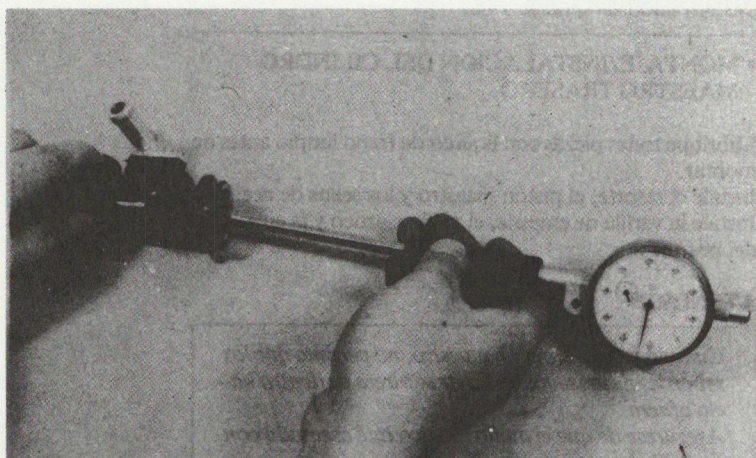


• REAR MASTER CYLINDER INSPECTION

Measure the master cylinder I.D.

SERVICE LIMIT: 14.055 mm (0.553 in)

Check the master cylinder for scores, scratches or nicks.

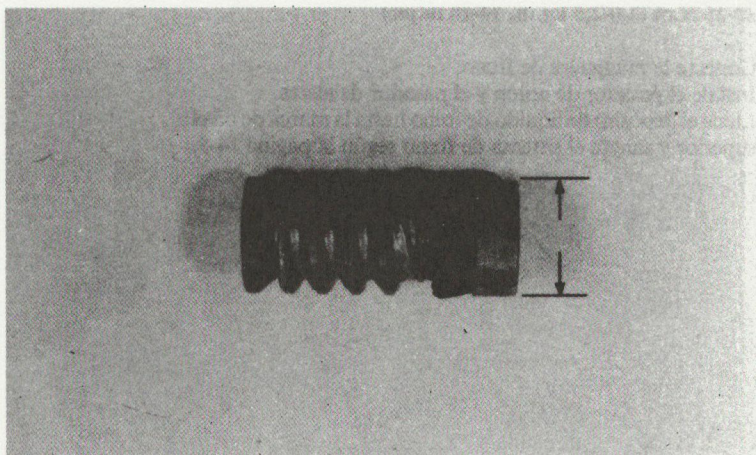


• REAR MASTER PISTON INSPECTION

Measure the master piston O.D..

SERVICE LIMIT: 13.945 mm (0.549 in)

Check the oil seals regarding damage before assembly.



- REAR MASTER CYLINDER ASSEMBLY/
INSTALLATION

Lubricate all parts with clean brake fluid before assembly.

Install the spring, the master piston and the oil seals.
Install the push rod, the snap ring and the piston boot.

CAUTION

When installing the master piston, do not allow the oil seals lips to turn inside out. Be certain the snap ring is firmly seated in the groove.

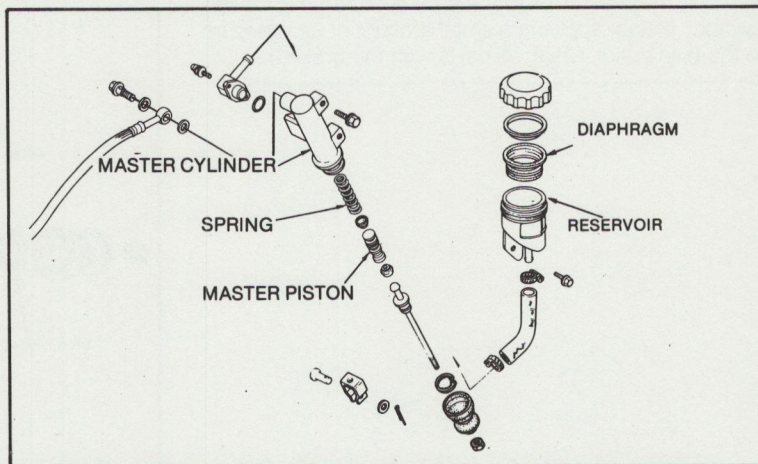
Install the master cylinder.

TORQUE: 20—25 N.m (2.0—2.5 kg.m, 14—18 ft.lb)

Connect the brake hose.

Install the joint pin and the cotter pin.

Fill the reservoir to the upper mark and bleed the brake system according page 14-5.



BRAKE CALIPERS

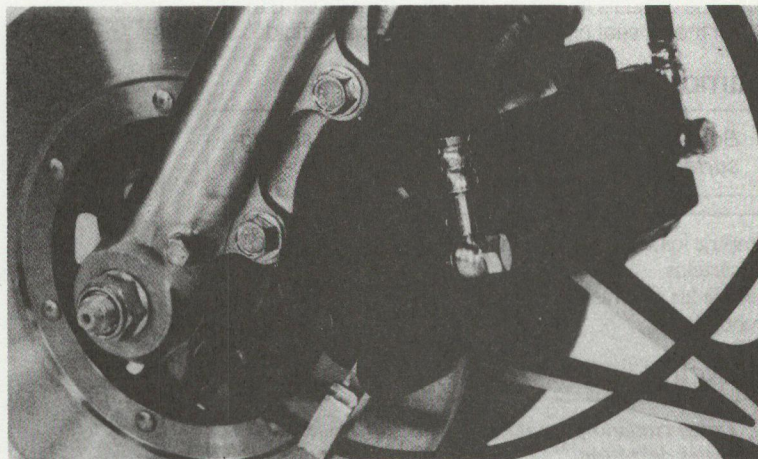
- FRONT CALIPER REMOVAL

Place a clean container under the caliper and disconnect the brake hose from the caliper.

CAUTION

Avoid spilling brake fluid on painted surfaces.

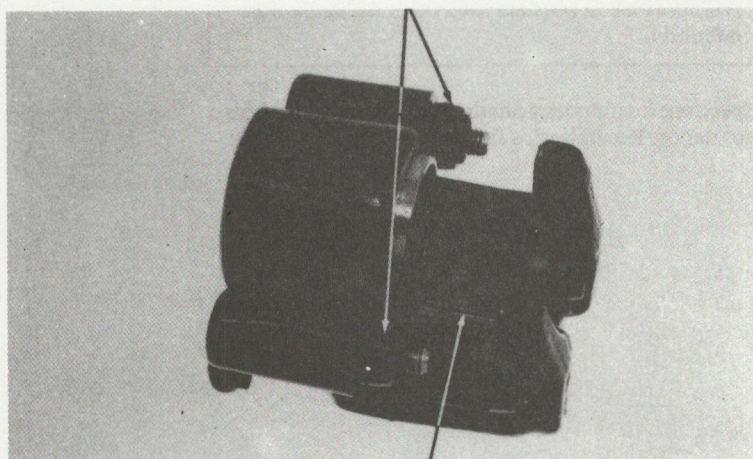
Remove the caliper bolt.



- FRONT BRAKE CALIPER DISASSEMBLY

Remove the pads and the pad spring.
Remove the caliper pivot bolts and boots.

BOOTS

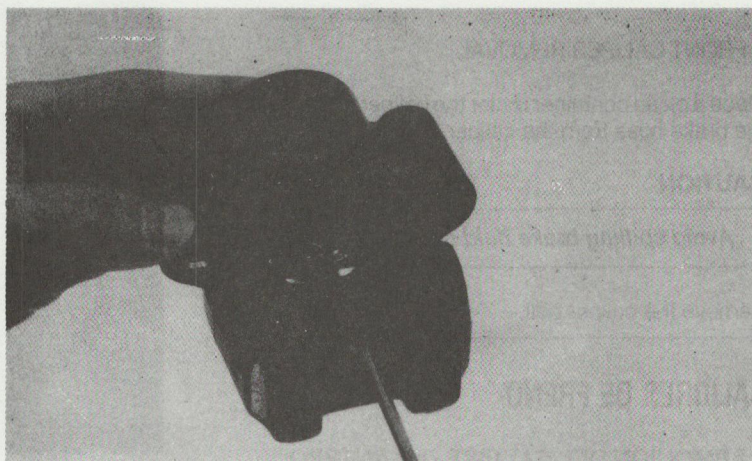


PAD SPRING

Push the oil seals in and lift them out, then discard them. Clean the oil seal grooves by means of brake fluid.

CAUTION

Be careful not to damage the piston sliding surfaces.



If necessary, apply compressed air to the caliper fluid inlet hole to get the piston out. Place a shop rag under the caliper to cushion the piston when it is expelled. Use the air in short spurts.

WARNING

Do not bring the nozzle too close to the inlet.

Examine the pistons and the cylinders regarding scoring, scratches or other damage and replace them if necessary.



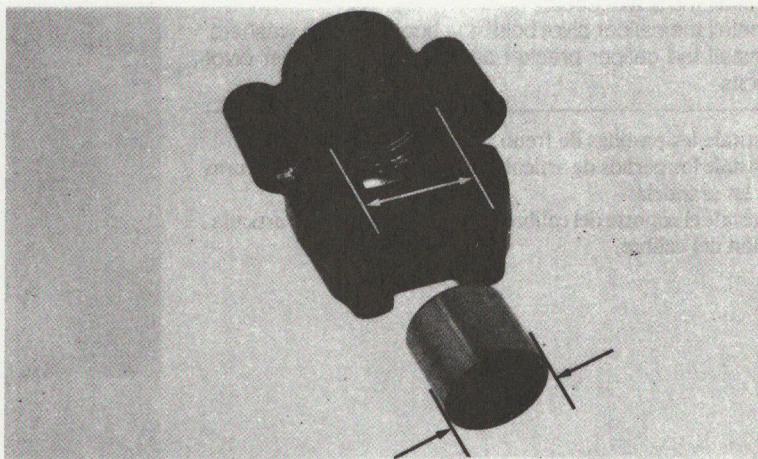
PISTON/CYLINDER INSPECTION

Check the piston regarding scoring, scratches or other faults. Measure the piston diameter by means of a micrometer.

SERVICE LIMIT: 38.11 mm (1.500 in)

Check the caliper cylinder regarding scoring, scratches or other faults. Measure the caliper cylinder bore.

SERVICE LIMIT: 38.22 mm (1.505 in)



• FRONT CALIPER ASSEMBLY

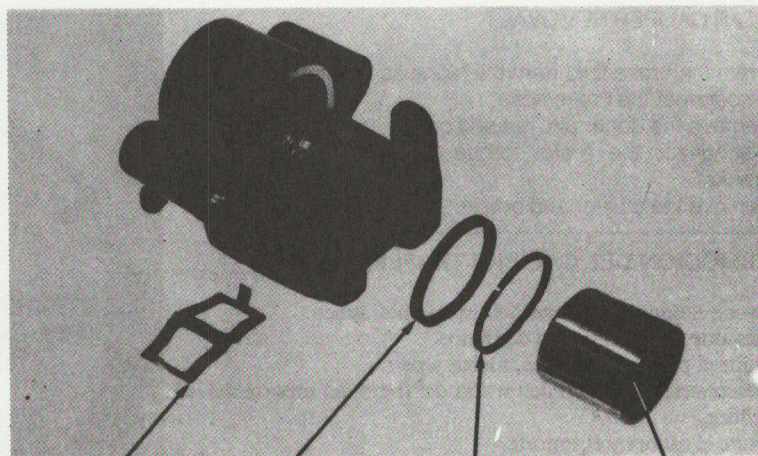
If the piston boot is hardened or deteriorated, replace it by a new one. The piston seal must be replaced by a new one whenever it is removed.

Coat the seal with silicone grease or brake fluid before assembly.

Install the piston with the dished ends toward the pads.

Then install the piston boot.

Install the pad spring.



PAD SPRING

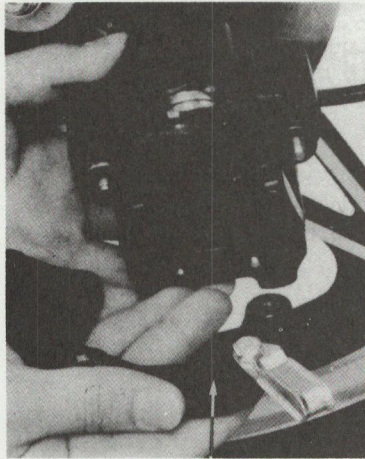
OIL SEAL

PISTON BOOT

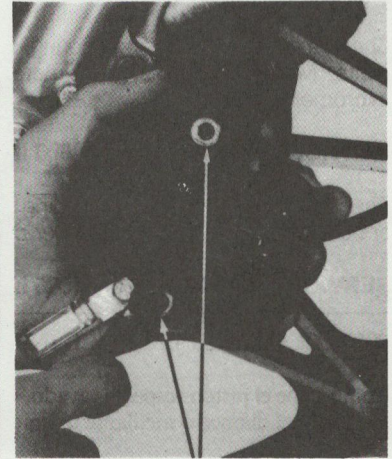
PISTON

HYDRAULIC BRAKE

Install the brake pads.
Install the caliper pivot bolts, the boots and the washers.
Install the caliper bracket and tighten the caliper pivot bolts.

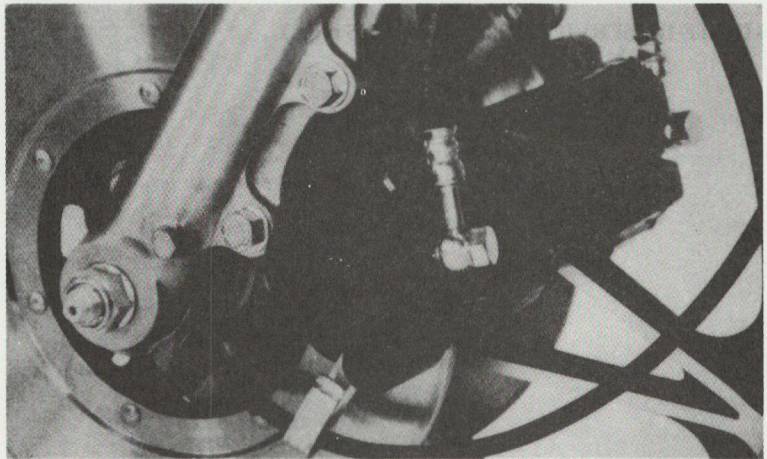


CALIPER BRACKET



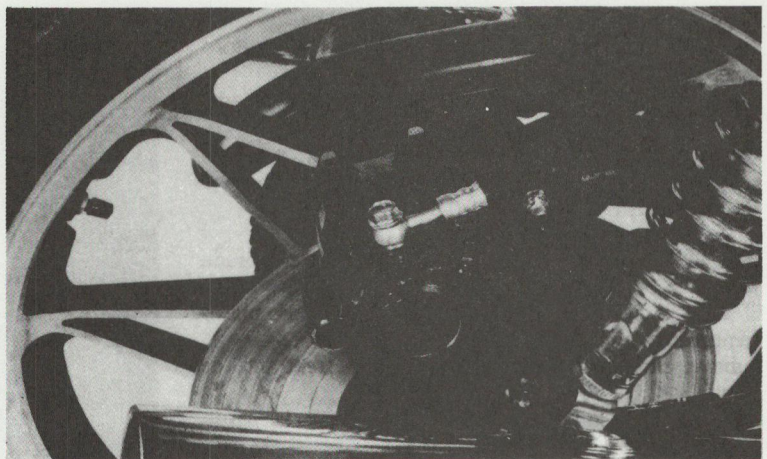
PIVOT BOLTS

Install the brake caliper by tightening the caliper mount bolts.
Install the caliper pivot bolt caps.

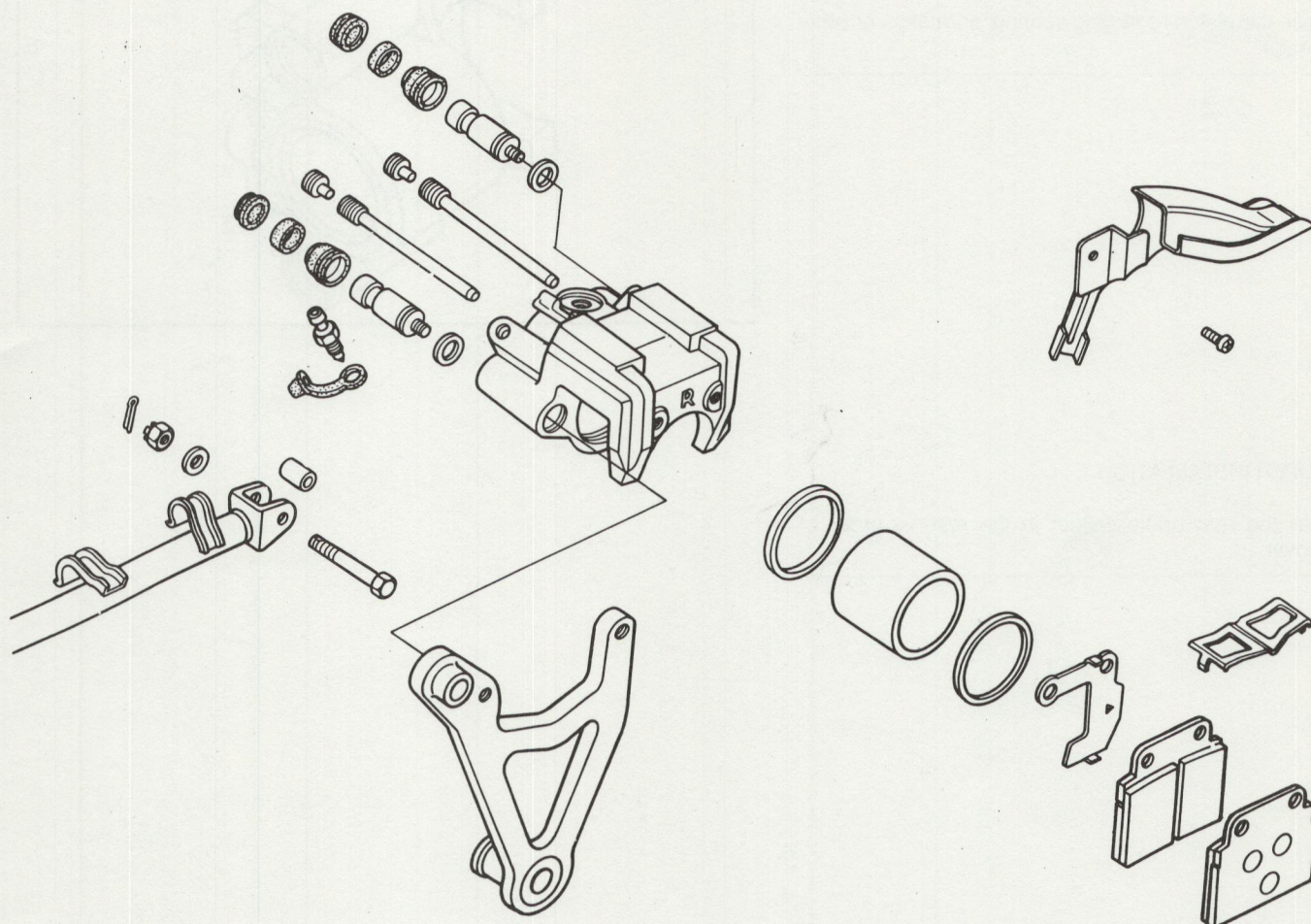


REAR CALIPER REMOVAL

Drain the brake fluid from the hydraulic system.
Disconnect the brake hose.
Remove the cotter pin, nut and bolt.
Disconnect the brake torque link from the caliper bracket.
Remove the caliper and bracket.



REAR CALIPER DISASSEMBLY/ASSEMBLY

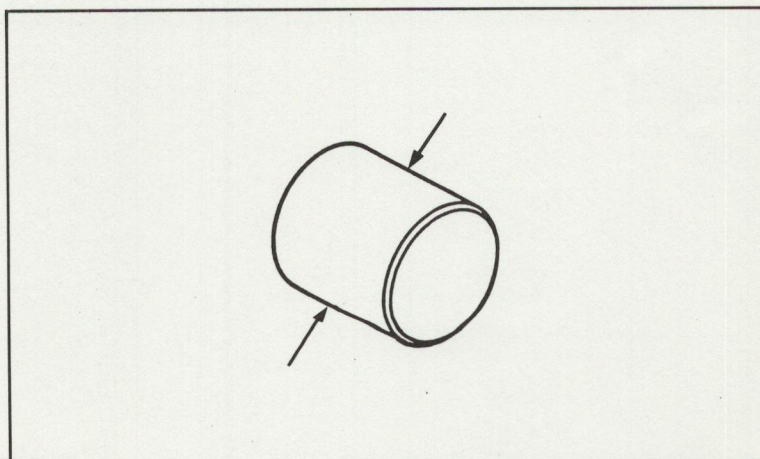


CALIPER PISTON INSPECTION

Measure the caliper piston O.D..

SERVICE LIMITE: 38.090 mm (1.4996 in)

Check the piston regarding scoring, scratches or other damage.



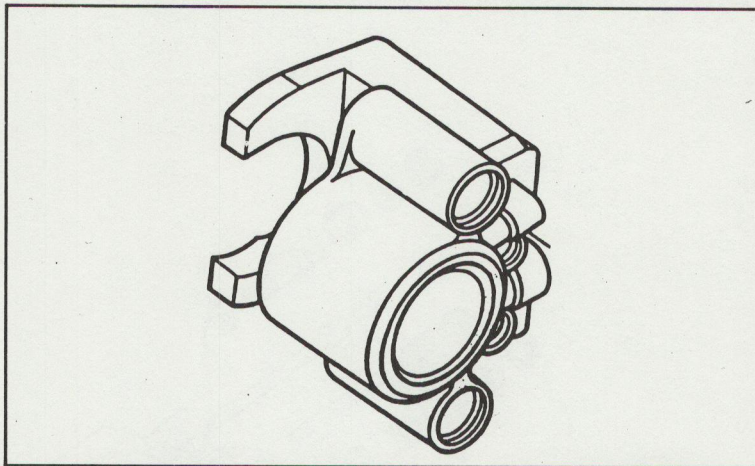
HYDRAULIC BRAKE

CALIPER CYLINDER INSPECTION

Measure the caliper cylinder I.D..

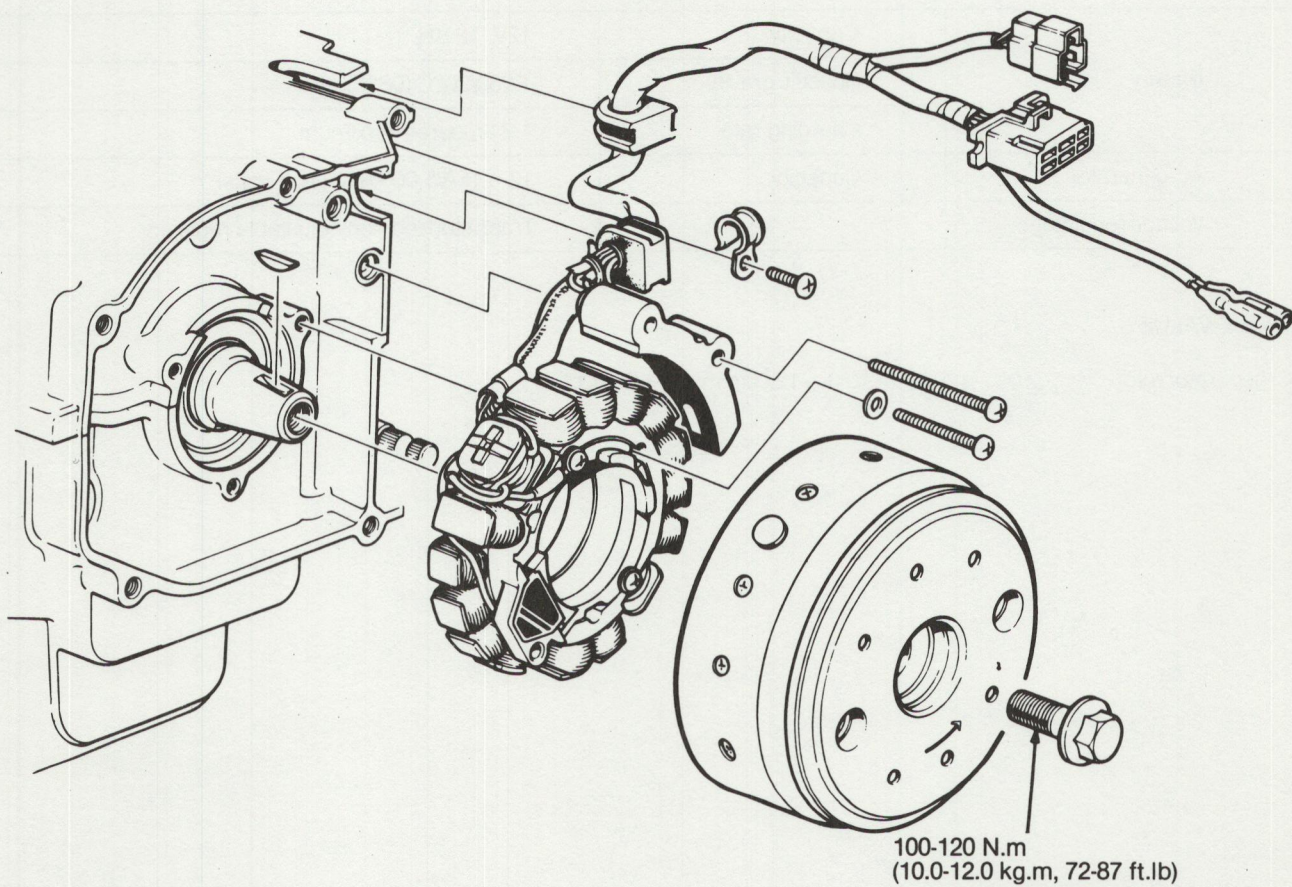
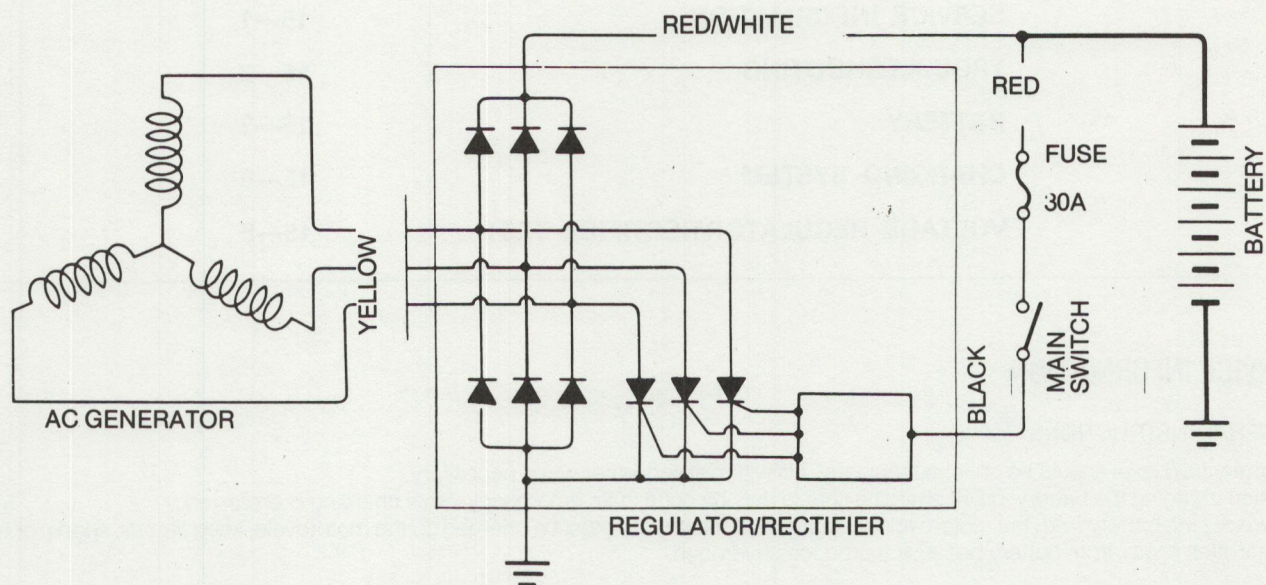
SERVICE LIMIT: 38.240 mm (1.5055 in).

Check the piston regarding scoring, scratches or other damage.



CALIPER INSTALLATION

Install the rear brake caliper in the reverse order of removal.



15. BATTERY/ CHARGING SYSTEM

HONDA®
CB450N

SERVICE INFORMATION	15—1
TROUBLESHOOTING	15—2
BATTERY	15—3
CHARGING SYSTEM	15—6
VOLTAGE REGULATOR/RECTIFIER TEST	15—8

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- Battery fluid level should be checked regularly. Fill with distilled water when necessary.
- When charging the battery, quick charging should only be done in an emergency. Slow charging is preferred.
- Remove the battery from the motorcycle to charge it. If the battery must be charged on the motorcycle, keep flames, sparks or lighted cigarettes a way from battery because it produces hydrogen.
- All charging system components can be tested on the motorcycle.

SPECIFICATIONS

Battery	Capacity	12V, 12 AH
	Specific gravity	1.280/20°C (68°F)
	Charging rate	1.2 amperes maximum
AC generator	Capacity	12—15A/5,000 rpm (14.5 volts)
Voltage regulator		Transistorized non-adjustable regulator

TORQUE VALUE

A.C. generator rotor 100—120 N.m (10.0—12.0 kg.m; 72—87 ft.lb)

TROUBLESHOOTING

No power — key turned on:

1. Dead battery
 - Low fluid level
 - Low specific gravity
 - Charging system failure
2. Disconnected battery cable
3. Burned out main fuse
4. Faulty ignition switch

Low power — key turned on:

1. Weak battery
 - Low fluid level
 - Low specific gravity
 - Charging system failure
2. Loose battery connection

Low power — engine running:

1. Undercharged battery
 - Low fluid level
 - One or more dead cells
2. Charging system failure

Intermittent power:

1. Loose battery connection
2. Loose charging system connection
3. Loose starting system connection
4. Loose connection or short circuit in ignition system
5. Loose connection or short circuit in lighting system

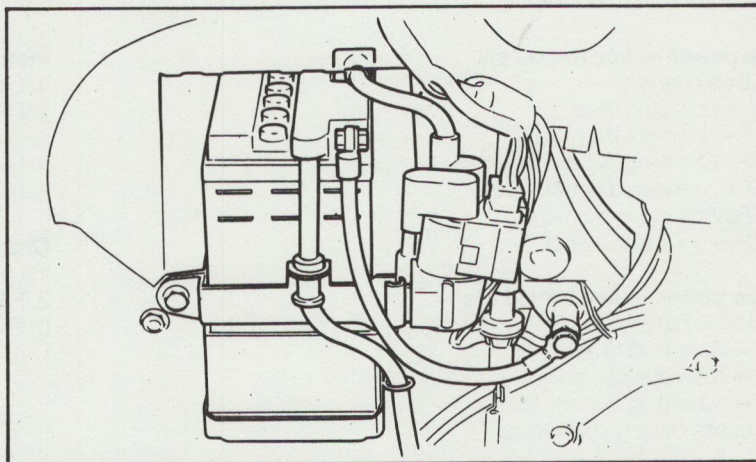
Charging system failure:

1. Loose, broken, or shorted wire or connection
2. Faulty voltage regulator/rectifier
3. Faulty A.C. generator

BATTERY

• REMOVAL

Remove the right side cover.
Disconnect the battery breather tube from the battery outlet.
Remove the bolt and open the battery holder.
Disconnect the battery cables; first the positive (+) cable and then the negative (-) cable.
Remove the battery.

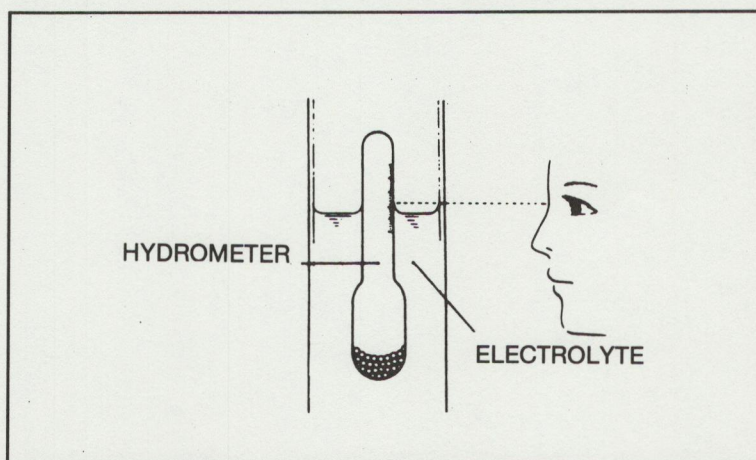


• TESTING SPECIFIC GRAVITY

Test each cell by means of a hydrometer.

SPECIFIC GRAVITY: 1.270—1.290
(20°C, 68°F)

1.270—1.290	Fully charged
Below 1.260	Undercharged



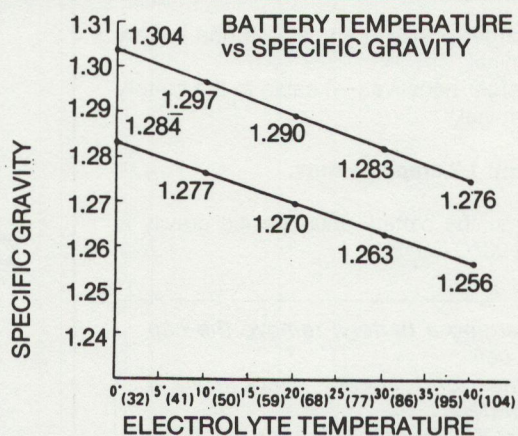
NOTE

- The battery must be recharged if the specific gravity is below 1.230.
- The specific gravity varies with the temperature as shown in the accompanying table.
- Replace the battery if sulfation is evident or if the space below the cell plates is filled with sediment.

WARNING

The battery contains sulfuric acid. Avoid contact with skin, eyes, or clothing.

Antidote: Flush with water and get prompt medical attention.



BATTERY / CHARGING SYSTEM

• BATTERY CHARGING

Connect the charger positive (+) cable to the battery positive (+) terminal.

Connect the charger negative (—) cable to the battery negative (—) terminal.

Charging current: 1.2 amperes max.

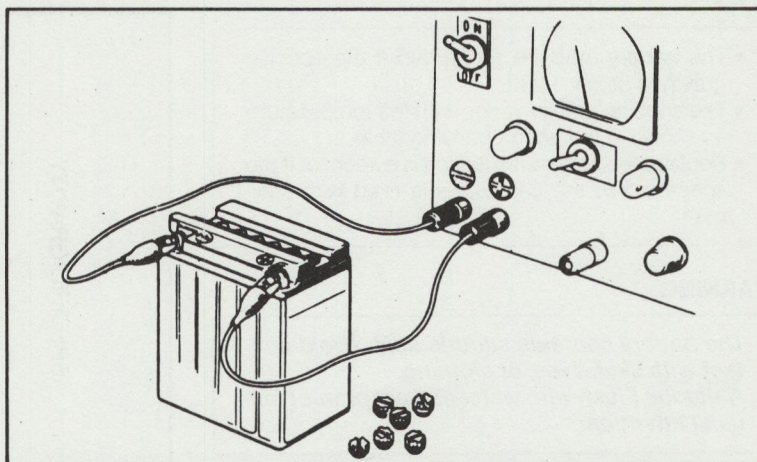
Charging: Charge the battery until specific gravity is 1.270—1.290 at 20°C (68°F).

WARNING

- *Before charging a battery, remove the cap from each cell.*
- *Keep flames and sparks away from a charging battery.*
- *Turn power ON/OFF at the charger, not at the battery terminals.*
- *Interrupt charging if the electrolyte temperature exceeds 45°C (113°F).*

CAUTION

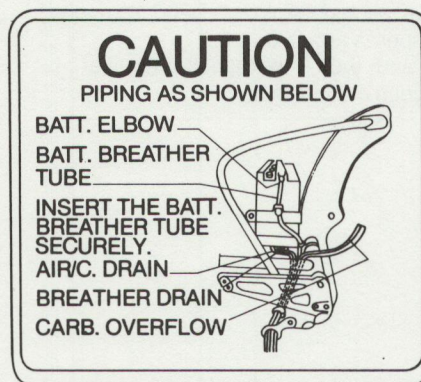
Quick charging should only be done in an emergency; slow charging is preferable.



CAUTION

Route the breather tube as shown on the battery caution label.

After installing the battery, coat the terminals with clean grease.



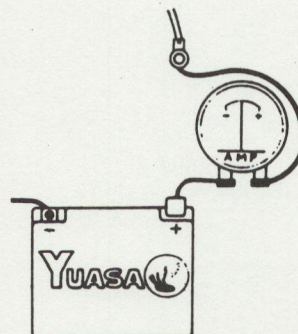
CHARGING SYSTEM

Current Test

NOTE

Be sure the battery is in good condition before performing this test.

Warm up the engine.
Remove the right side cover.
Turn the headlight high beam on.
Run the engine above 2,000 rpm.
Disconnect the battery positive cable at the battery and connect an ammeter between the battery cable and the terminal.



BATTERY / CHARGING SYSTEM

Allow the engine to idle.

Slowly increase the engine speed.

Charging amperage should begin at 1,200 rpm and should be 12-15 amperes at 5,000 rpm.

Check the stator and then the regulator/rectifier, if charging specifications are not met.

TECHNICAL DATA

CHARGING START 1,200 rpm	CHARGING AT 5,000 rpm
6,5 A min	12-15 A

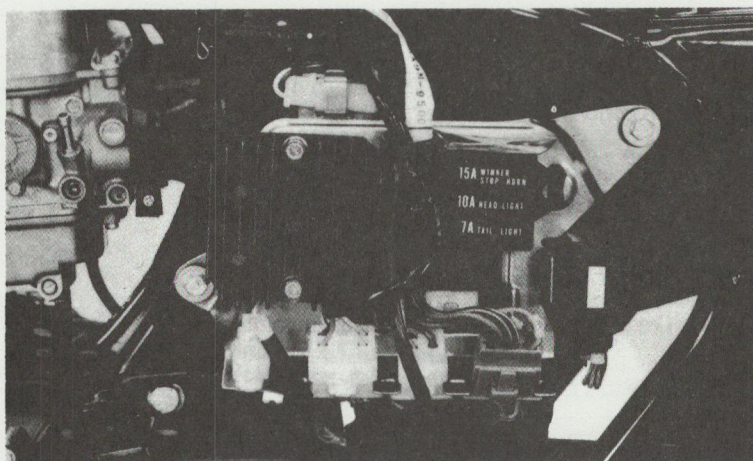
• STATOR COIL CONTINUITY TEST

Remove the frame left side cover.

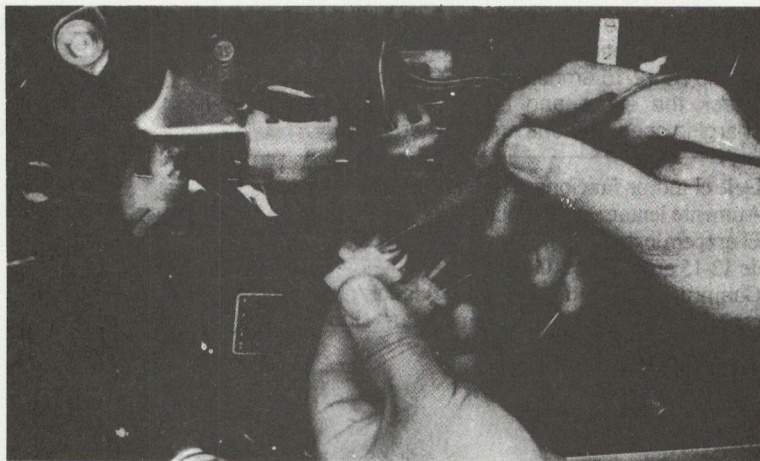
Disconnect the A.C. generator couplers.

NOTE

The stator can be checked in the motorcycle. See the following inspection.

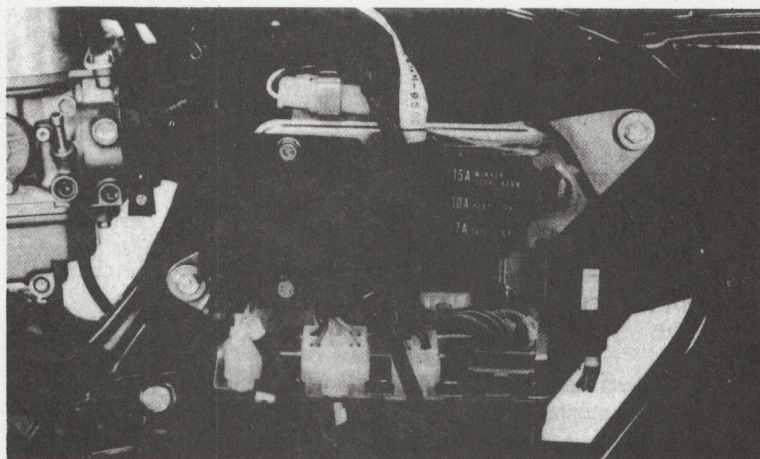


Check the yellow leads to the A.C. generator regarding continuity with each other.
Replace the stator if any yellow lead is not continuous with the other, or if any lead has continuity to ground.



VOLTAGE REGULATOR/RECTIFIER TEST

Check the resistance between the regulator/rectifier leads at the couplers by means of an ohmmeter.



RESISTANCE IN NORMAL DIRECTION:

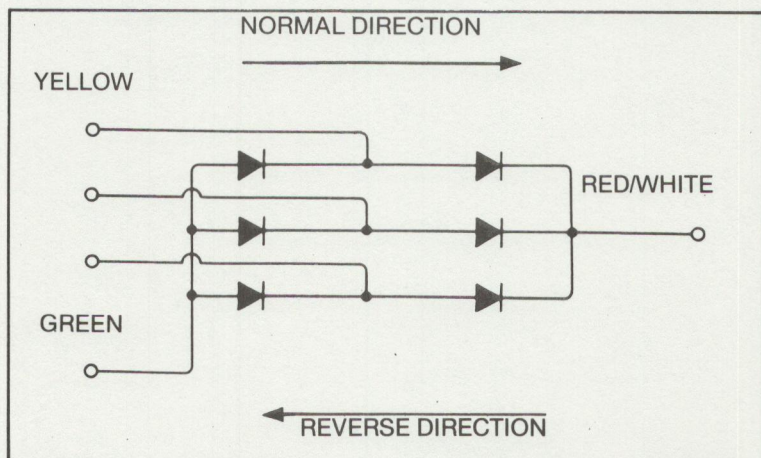
Green and any yellow: 5—40 Ω

Red/white and any yellow: 5—40 Ω

RESISTANCE IN REVERSE DIRECTION:

Red/white and any yellow: 2000 Ω

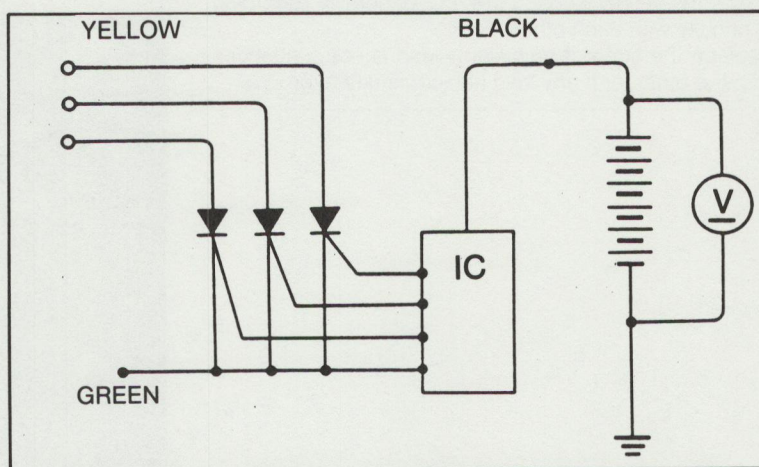
Green and any yellow: 2000 Ω

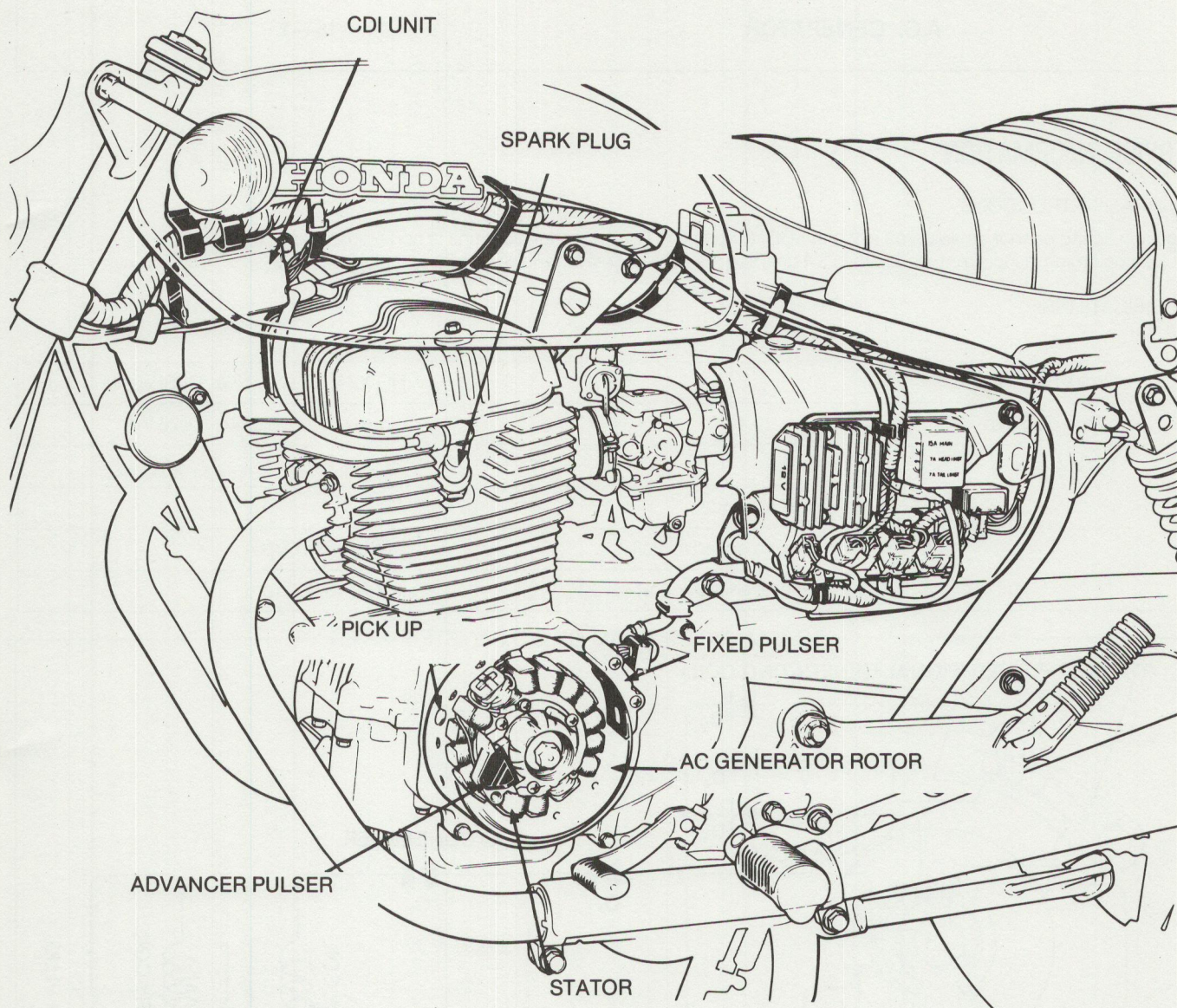


BATTERY / CHARGING SYSTEM

• VOLTAGE REGULATOR PERFORMANCE TEST

Test by means of a voltmeter.
Connect a voltmeter across the battery.
Check the regulator performance with the engine running.
The regulator must divert current to ground when the battery voltage reaches 14.0—15.0 V.





16. IGNITION SYSTEM

HONDA®
CB450N

SERVICE INFORMATION	16-1
TROUBLESHOOTING	16-2
IGNITION COIL	16-3
CDI UNIT	16-4
A.C. GENERATOR	16-7

SERVICE INFORMATION

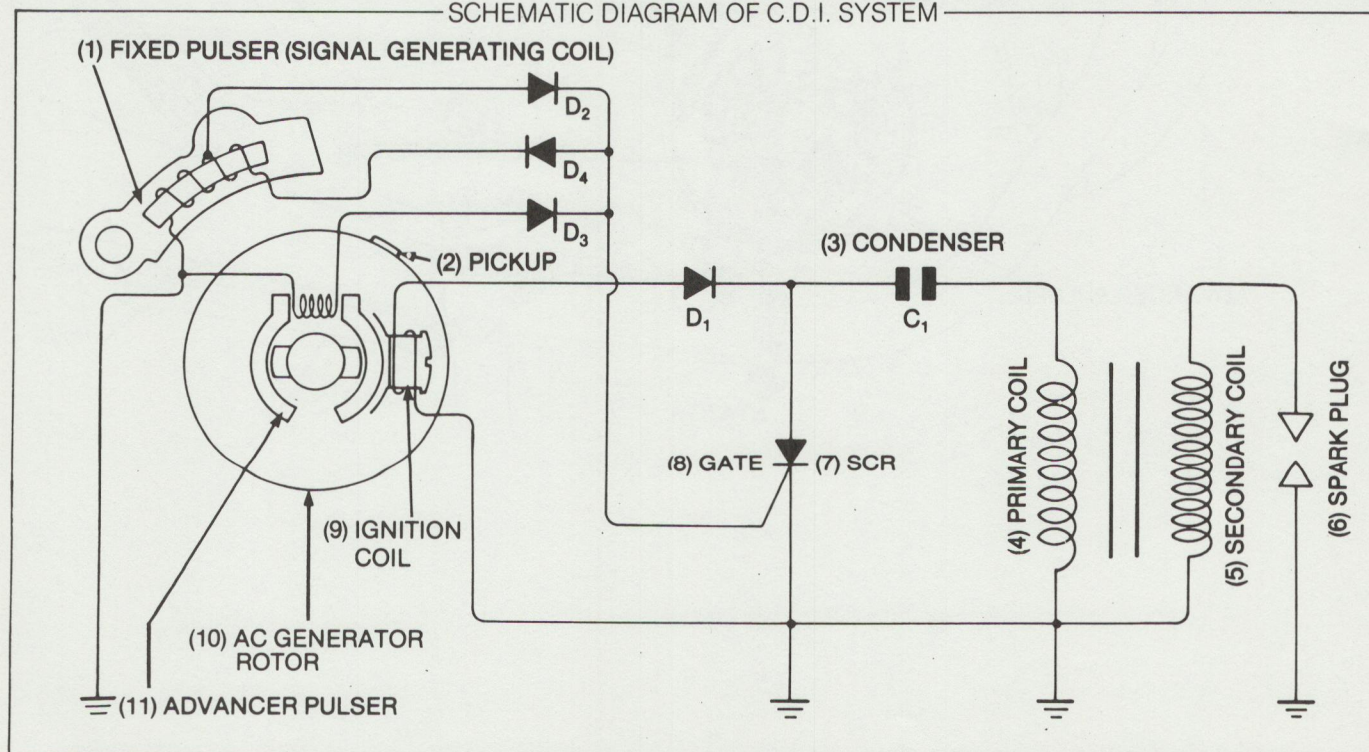
GENERAL INSTRUCTIONS

- Ignition timing cannot be adjusted since the CDI (Capacitive Discharge Ignition) unit is non-adjustable.
- If ignition timing is incorrect, check the CDI unit and the A.C. generator and replace any faulty part.

SPECIFICATIONS

Spark plug		ND X24ESR—U, NGK DR8ES—L
Spark plug gap		0.6—0.7 mm (0.024—0.028 in)
Ignition timing	Initial	15°
	Full advance	43°
	Engine speed (initial)	1,600—2,000 rpm
	Engine speed (full advance)	4,500—5,350 rpm

SCHEMATIC DIAGRAM OF C.D.I. SYSTEM



TROUBLESHOOTING

No spark at plug

- Engine stop switch "OFF"
- Poorly connected, broken or shorted wires
 - Between A.C. generator and ignition coil
 - Between CDI unit and engine stop switch
 - Between CDI unit and ignition coil
 - Between CDI unit and ignition switch
 - Between ignition coil and plug
 - Between pulse generator and CDI unit
- Faulty ignition switch
- Faulty ignition coil
- Faulty CDI unit
- Faulty A.C. generator
- Faulty pulse generator

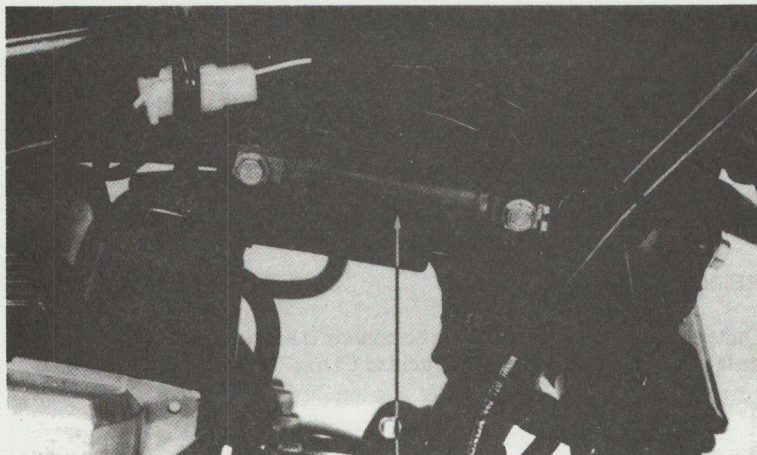
Engine starts but runs poorly

- Ignition primary circuit
 - Faulty ignition coil
 - Loose or bare wire
 - Faulty pulse generator
- Secondary circuit
 - Faulty A.C. generator
 - Faulty C.D.I. unit
 - Faulty pulse generator
 - Faulty spark advancer

IGNITION COIL

• REMOVAL

Remove the fuel tank.
Disconnect the wire leads.
Remove the ignition coil attaching bolts and the ignition coil.

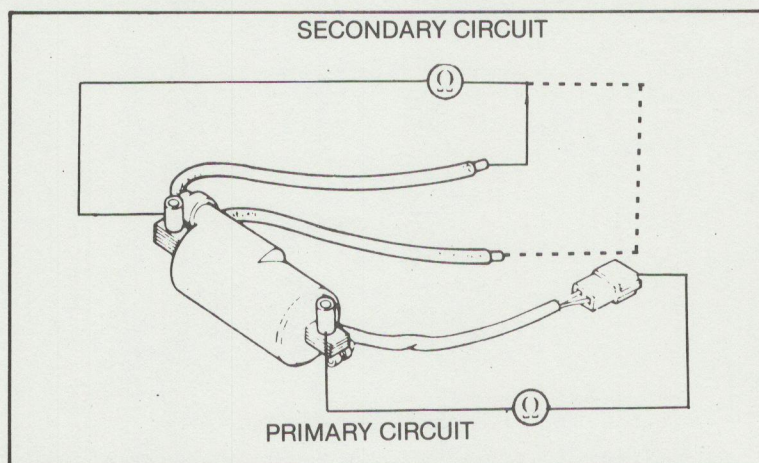


IGNITION COIL

• INSPECTION

Measure the coil resistance.

PRIMARY: $0.55 \pm 0.055 \Omega$
SECONDARY: $8 \pm 0.8 \text{ k} \Omega$



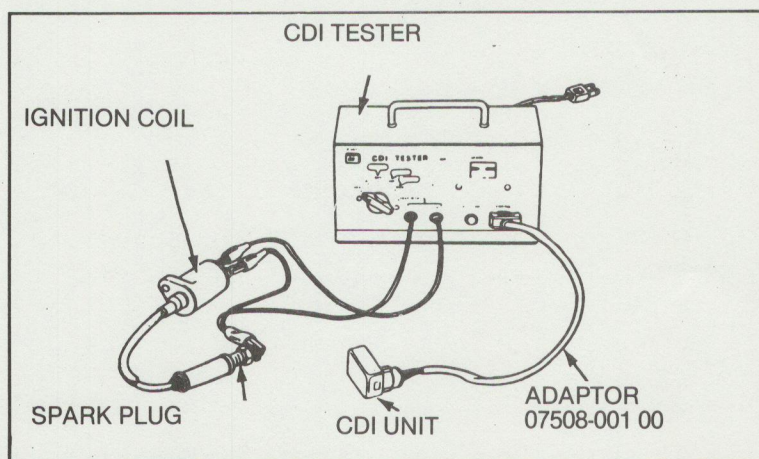
• PERFORMANCE TEST

Check the ignition coil by using the CDI tester.

NOTE

Follow the tester manufacturer's instructions.

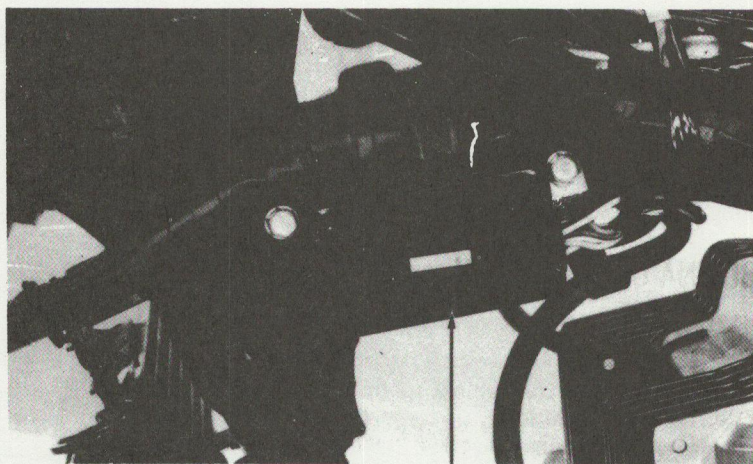
If no spark is generated at the plug, replace the coil.



CDI UNIT

REMOVAL

Remove the fuel tank and disconnect the coupler from the CDI unit. Then remove the CDI unit.



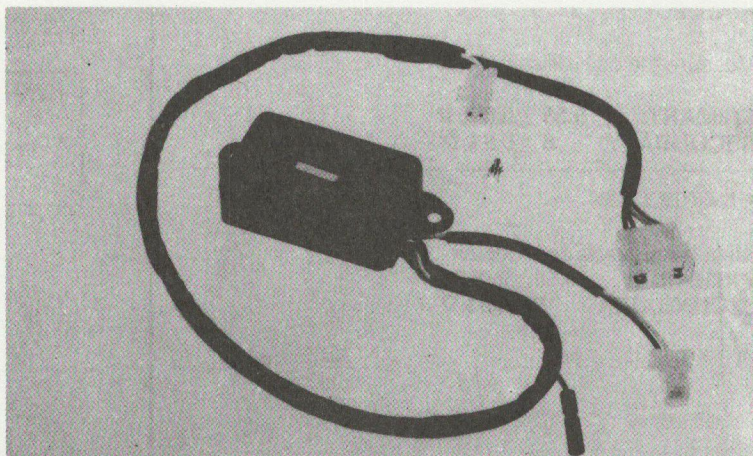
CDI UNIT

• INSPECTION

Disconnect the wiring. Set the tester at $\times k \Omega$ or $\times 100 \Omega$ and check continuity of CDI terminals. Replace the CDI unit if the readings do not fall within the limits shown in the table.

NOTE

- The CDI unit is fully transistorized. For accurate testing, it is necessary to use a specified electrical tester.
- The use of an improper tester or measurements in improper range may give false readings.
- Use SANWA ELECTRICAL TESTER (SP-10D) P/N 07308—0020000 or KOWA ELECTRICAL TESTER (TH5H).



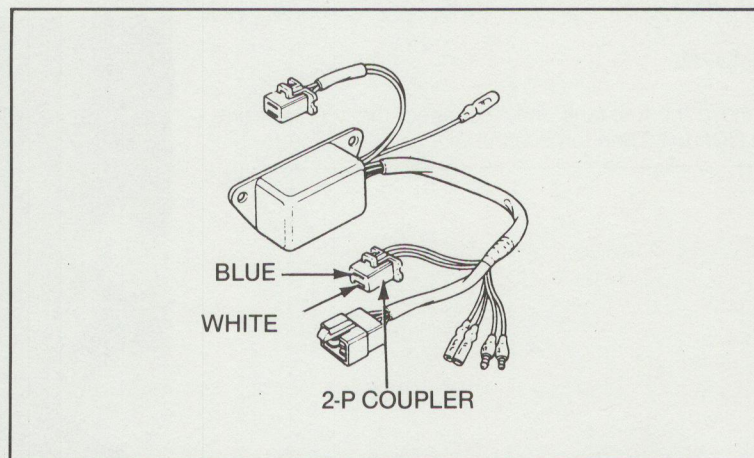
NOTE

- Discharge the capacitor before testing. "NEEDLE SWINGS AND RETURNS" indicates that a capacitor is being charged with the tester. The tester needle will stay at infinite in subsequent tests unless the capacitor is discharged.

The resistances shown in the table indicate those to be read on the tester, not of specific circuits or parts.

UPPER ROW: MEASURING RANGE
(SANWA TESTER) x kΩ

LOWER ROW: MEASURING RANGE
(KOWA TESTER) x 100Ω



Probe	Brown Castaño	Light blue Azul claro	White Blanco	Green Verde	Pink Rosa	Blue Azul	Black/White Branco Negro	Yellow Amarillo
Probe								
Brown		10 ~ 20 30 ~ 80	500 ~ ∞ 1 ~ ∞	3 ~ 8 10 ~ 20	7 ~ 11 20 ~ 50	500 ~ ∞ 1 K ~ ∞	500 ~ ∞ 1 K ~ ∞	500 ~ ∞ 1 K ~ ∞
Light blue	1 M ~ ∞ 1 K ~ ∞		1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞
White	1 M ~ ∞ 1 K ~ ∞	10 ~ 20 30 ~ 80		3 ~ 7 5 ~ 20	5 ~ 20 15 ~ 40	1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞
Green	1 M ~ ∞ 1 K ~ ∞	3 ~ 8 10 ~ 20	500 ~ ∞ 1 K ~ ∞		0.5 ~ 3 5 ~ 20	500 ~ ∞ 1 K ~ ∞	500 ~ ∞ 1 K ~ ∞	500 ~ ∞ 1 K ~ ∞
Pink	1 M ~ ∞ 1 K ~ ∞	7 ~ 12 20 ~ 50	500 ~ ∞ 1 K ~ ∞	0.5 ~ 3 5 ~ 20		500 ~ ∞ 1 K ~ ∞	500 ~ ∞ 1 K ~ ∞	500 ~ ∞ 1 K ~ ∞
Blue	1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞		1 M ~ ∞ 1 K ~ ∞	1 M ~ ∞ 1 K ~ ∞
Black/White	1 M ~ ∞ 1 K ~ ∞	10 ~ 30 30 ~ 80	1 M ~ ∞ 1 K ~ ∞	3 ~ 8 5 ~ 20	7 ~ 15 15 ~ 40	30 ~ 100 100 ~ 500		▽
Yellow	1 M ~ ∞ 1 K ~ ∞	▽	▽	▽	▽	▽	▽	

▽ Needle swings and get back to.

INSPECTION

BY MEANS OF CDI TESTER

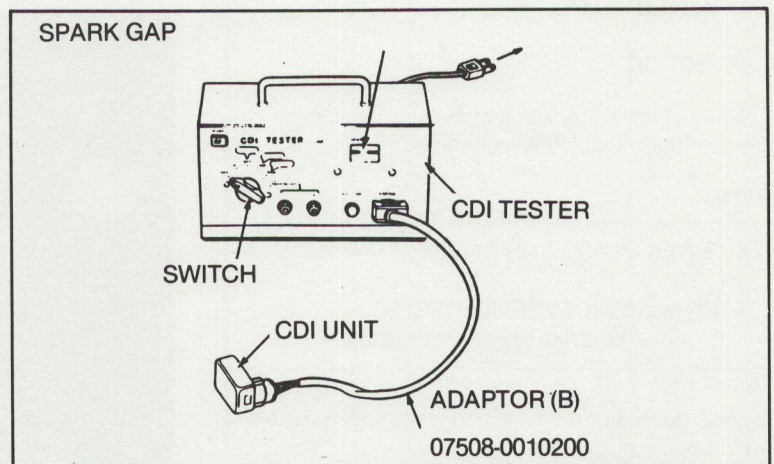
NOTE

Follow the tester manufacturer's instructions.

Connect the adaptor (B) 07508—0010200 to the CDI unit coupler, and connect the CDI tester.

	CDI good condition	No good condition
1 OFF	No Fire	—
2 P	↑	—
3 EXT	↑	Fire
4 ON 1	Fire	No Fire
5 ON 2	↑	↑

Replace the CDI unit, if it is not in good condition.



IGNITION SYSTEM

A.C. GENERATOR

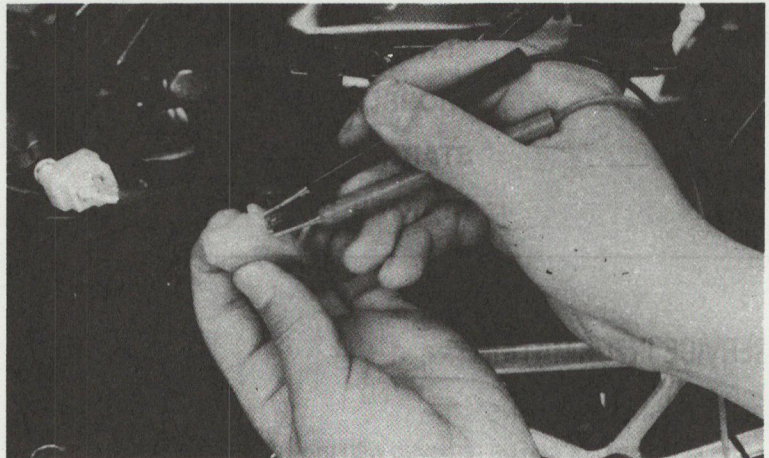
• INSPECTION

Disconnect the stator wires at their connections.
Measure resistances between the terminals.

NOTE

- TESTER MEASURING RANGE:
x10 Ω
- Use the HONDA SERVICE TESTER
(07308—0020000) to perform this test.

For A.C. generator removal and installation procedure,
refer to Section 9.



TERMINALS	OHMS
Green and white	315—385
Blue and white	77—95
Green and brown	76—92
Green and light blue	95—116
Green and pink	126—154

17. ELECTRIC STARTER

SERVICE INFORMATION	17-1
TROUBLESHOOTING	17-1
STARTER MOTOR	17-2
STARTER RELAY SWITCH	17-5

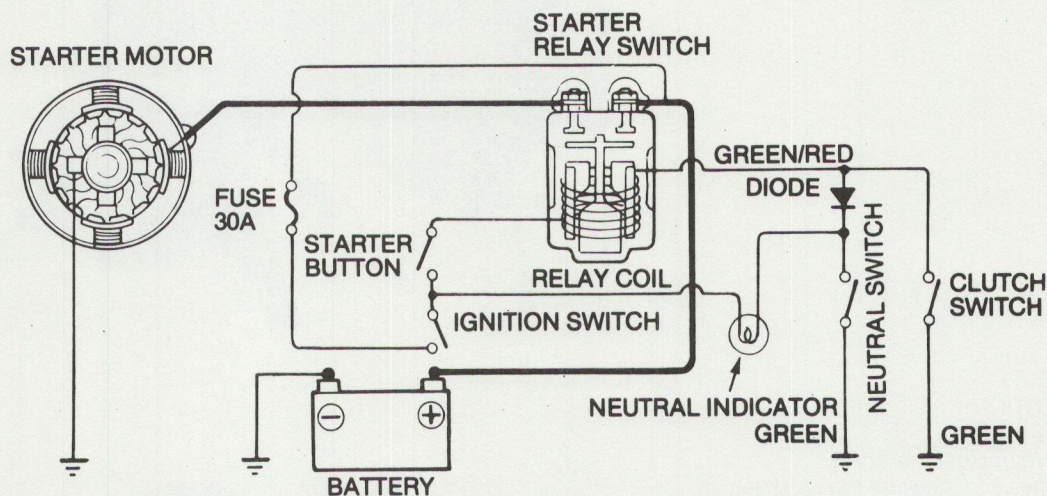
SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The starter motor can be removed with the engine in the frame.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Starter motor	Brush spring tension	495-605 g	400 g
	Brush length	11.0—12.5 mm (0.43—0.49 in)	5.5 mm (0.21 in)



TROUBLESHOOTING

Starter motor will not turn

- Discharged battery
- Faulty ignition switch
- Faulty starter switch
- Faulty neutral switch
- Faulty starter relay switch
- Loosen or disconnected wire or cable
- Open neutral diode

Starter motor turns the crankshaft slowly

- Low specific gravity
- Excessive resistance in circuit
- Binding in starter motor

Starter motor turns, but crankshaft does not turn

- Faulty starter clutch
- Faulty starter motor gears
- Faulty starter motor or idle gear

Starter motor and crankshaft turn, but engine does not start

- Faulty ignition system
- Engine problems

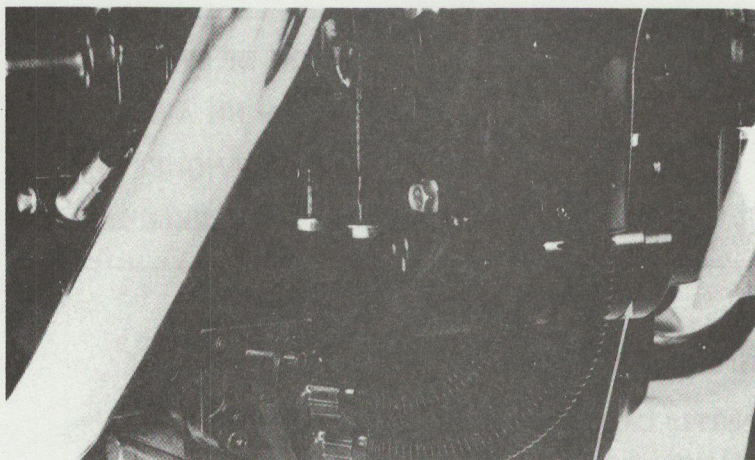
STARTER MOTOR

• REMOVAL

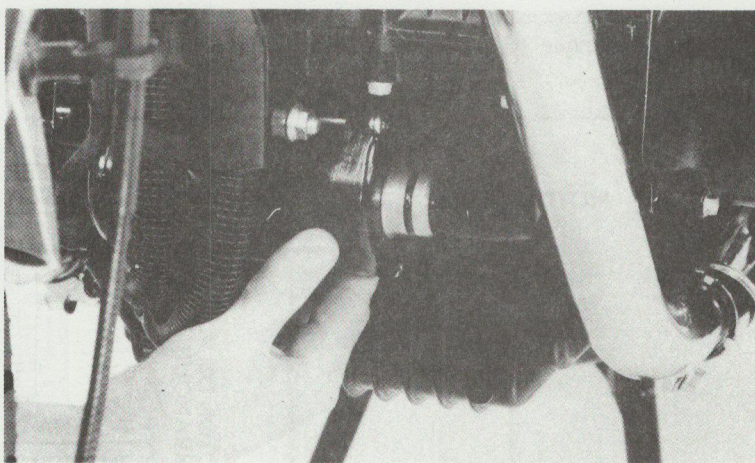
WARNING

With the ignition switch OFF, remove the negative cable at the battery before servicing the starter motor.

Disconnect the starter cable.
Remove the two mounting bolts and remove the starter motor.



STARTER MOTOR

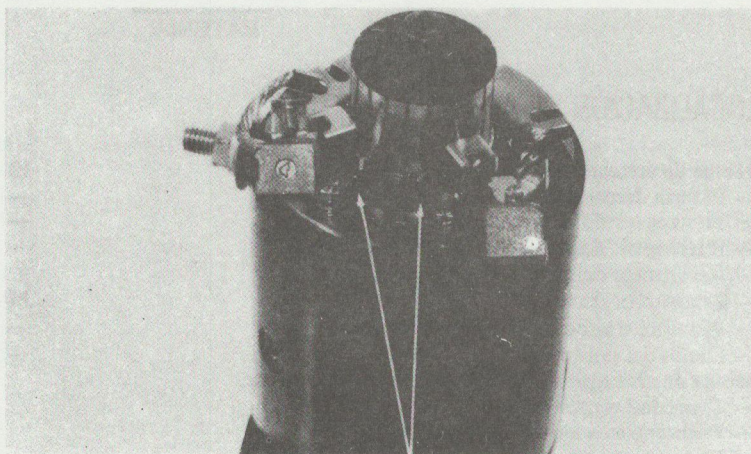


• BRUSH INSPECTION

Remove the starter motor case screws.
Inspect the brushes and measure the brush length.
Measure the brush spring tension by means of a spring scale.

SERVICE LIMITS:

Brush length: 5.5 mm (0.22 in)
Brush spring tension: 400 g



BRUSH SPRINGS

• COMMUTATOR INSPECTION

Remove the starter motor case.

NOTE

Record the location and number of thrust washers.

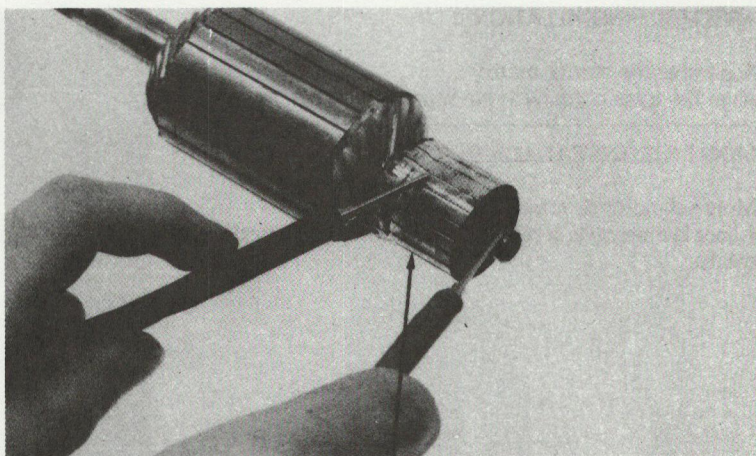
Inspect the commutator bars regarding discoloration. The bars discolored in pairs indicate grounded armature coils.

NOTE

Do not use emery or sand paper on the commutator.



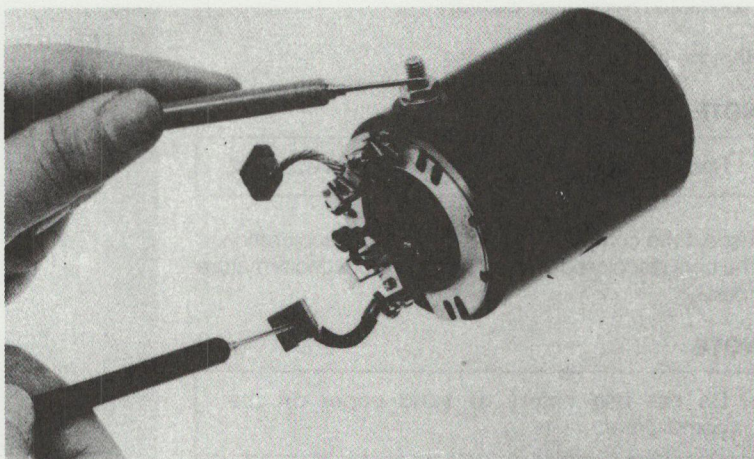
Check continuity between pairs of commutator bars, and also between commutator bars and armature shaft. There should be continuity. Also make a continuity check between individual commutator bars and the armature shaft. There should be no continuity.



COMMUTATOR

• FIELD COIL INSPECTION

Check continuity from the cable terminal to the motor case and from the cable terminal to the brush wire. Replace the starter motor if the field coil is not continuous or if it is shorted to the motor case. There should be continuity between the cable terminal and the brush wires and no continuity between the cable terminal and the case.

**ASSEMBLY/INSTALLATION**

Assemble the starter motor.
Align the case notch with the brush holder pin.

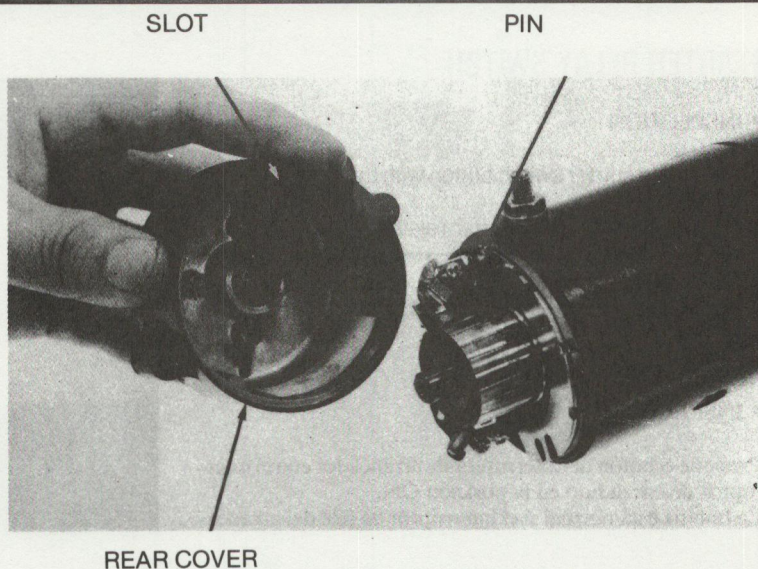


BRUSH HOLDER

PIN

NOTCH

Install the rear cover aligning its slot with the brush holder pin.
Be sure to install the original number of thrust washers.

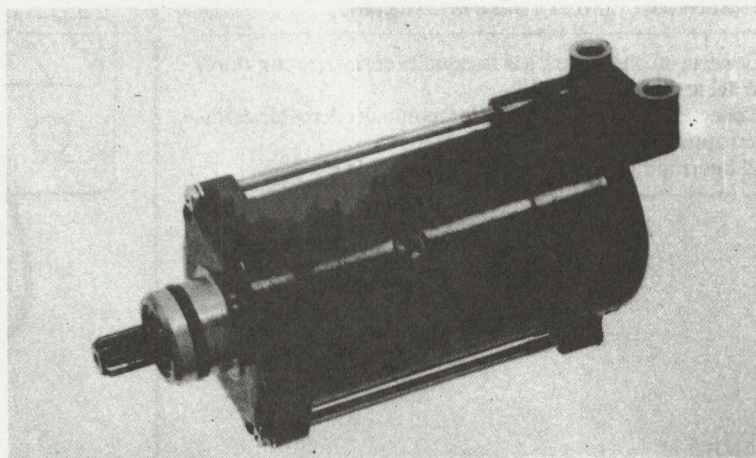


Position the tongued washer on the front cover and install the front cover.
Be sure to install the original number of thrust washers.

NOTE

Align the punch mark on the case and the punch mark on the cover.

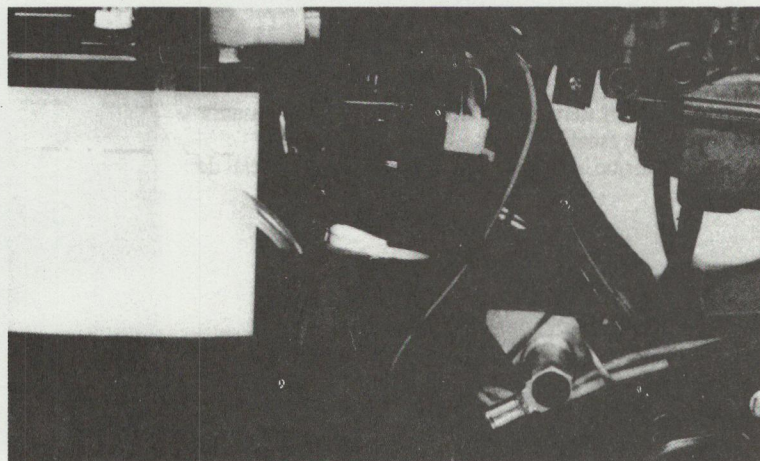
Install the starter motor on the engine.
Connect the starter motor cable.
Connect the negative cable of the battery.



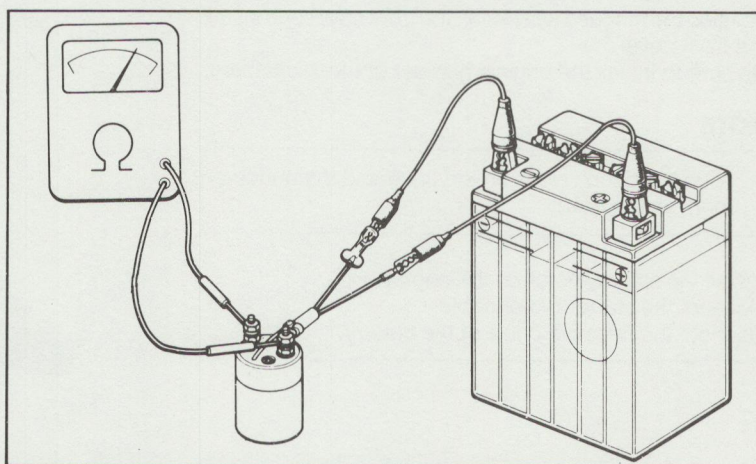
STARTER RELAY SWITCH

- INSPECTION

Depress the starter switch button with the ignition switch ON.
The coil is normal if the starter relay switch clicks.



Connect an ohmmeter to the starter relay switch terminals.
Connect a 12 V battery to the switch cable terminals.
The switch is normal if there is continuity.



SERVICE INFORMATION	18—1	FRONT STOPLIGHT SWITCH	18—9
TROUBLESHOOTING	18—1	REAR STOPLIGHT SWITCH	18—10
HEADLIGHT	18—2	HANDLEBAR SWITCHES	18—10
INSTRUMENTS	18—4	OIL PRESSURE WARNING SWITCH	18—11
IGNITION SWITCH	18—7	NEUTRAL SWITCH	18—12
TURN SIGNAL LIGHT	18—8	HORN	18—12
STOP/TAIL LIGHT	18—9	FUEL LEVEL SENSOR	18—13

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- Some wires have different colored bands around them near the connector. These are connected to other wires which correspond to the band color.
- All plastic plugs have locking tabs that must be released before disconnecting and must be aligned when reconnecting.
- The following color codes used are indicated throughout this section and on the wiring diagram.

Bu = Blue
Bl = Black
Br = Brwn

G = Green
Gr = Grey
Lb = Light Blue

Lg = Light Green
O = Orange
P = Pink

R = Red
W = White
Y = Yellow

- To isolate an electrical failure, check the continuity of the electrical path through the component. A continuity check can usually be made without removing the part from the motorcycle. Simply disconnect the wires and connect a continuity tester or volt-ohmmeter to the terminals or connections.
- A continuity tester is useful when checking to find out whether or not there is an electrical connection between the two points. An ohmmeter is needed to measure the resistance of a circuit, as when there is a specific coil resistance involved, or when checking high resistance by corroded connections.

TROUBLESHOOTING

No lights come on when ignition switch is turned ON

- Faulty or burned out bulb
- Faulty switch
- Wiring to that component has open circuit
- Blown fuse
- Loose, broken or faulty wiring
- Dead or disconnected battery

All lights come on, but dimly, when ignition switch is turned ON

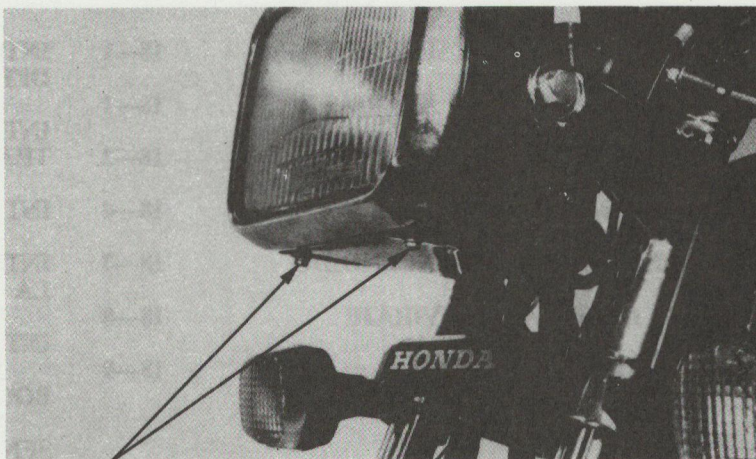
- Low battery voltage
- Wiring or switch has excessive resistance

Headlight beam does not shift when headlight dimmer switch is operated

- Burned out beam filament
- Faulty headlight dimmer switch

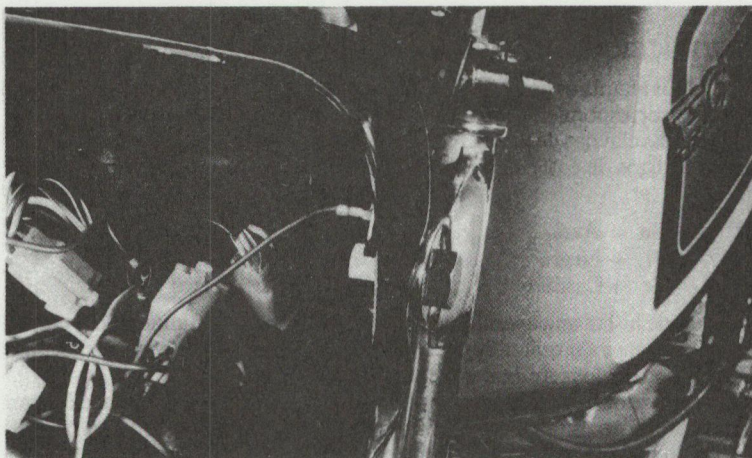
HEADLIGHT**REMOVAL**

Remove the headlight set screws.
Disconnect the headlight wire couplers and remove the headlight.

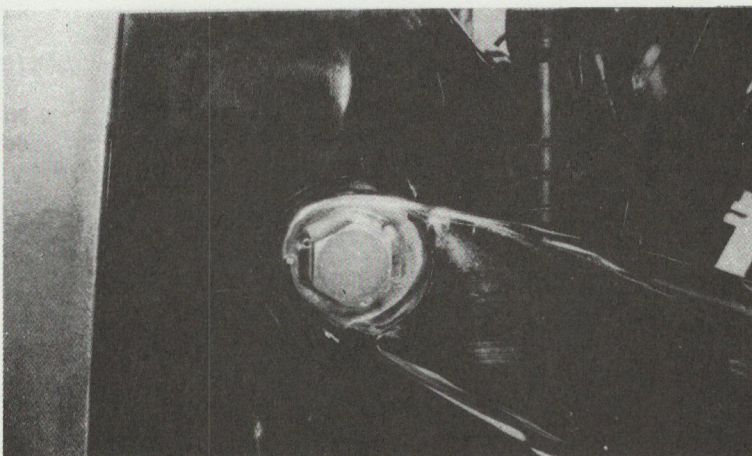


SCREWS

Disconnect all wires in the headlight case at their couplers and connectors.
Remove the headlight case mounting bolts and headlight case.

**INSTALLATION**

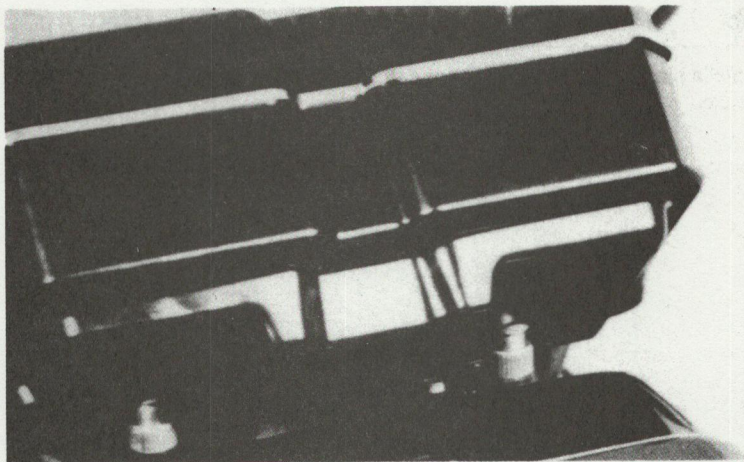
Connect the wires color-to-color.
Align the punch mark on the headlight case with the punch mark on the headlight case brackets.



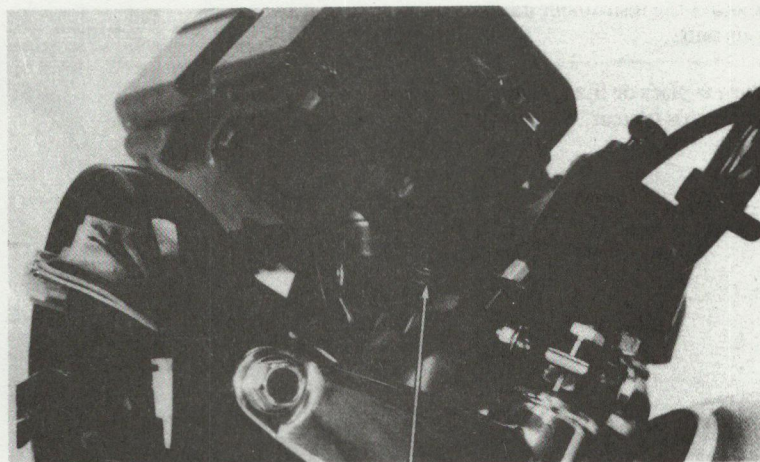
INSTRUMENTS

• INSTRUMENT REMOVAL

Remove the headlight.
Disconnect the instrument cluster wire coupler.
Disconnect the speedometer and tachometer cables by loosening the cable nuts.



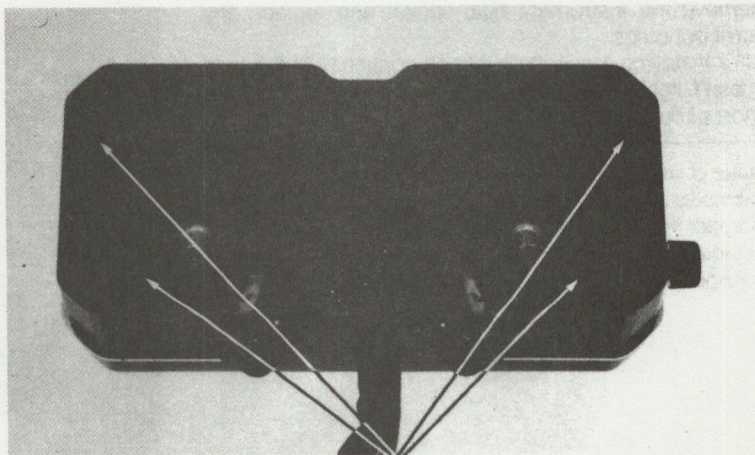
Remove the mounting nuts. Then remove the instrument cluster.



MOUNTING NUT

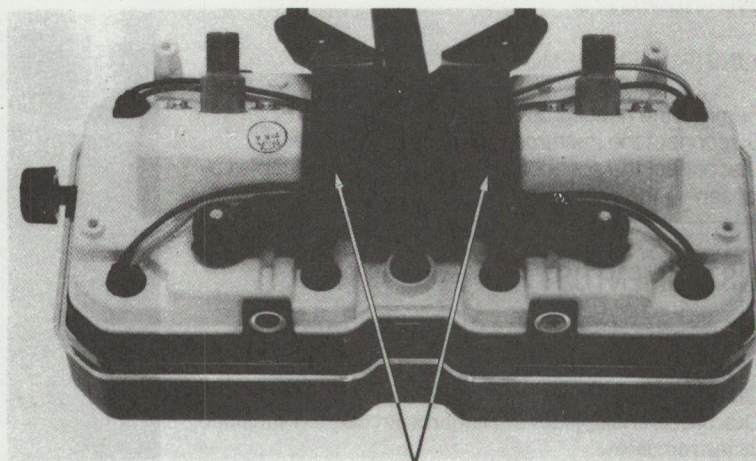
• CLUSTER DISASSEMBLY

Separate the instrument cluster by removing the four screws.



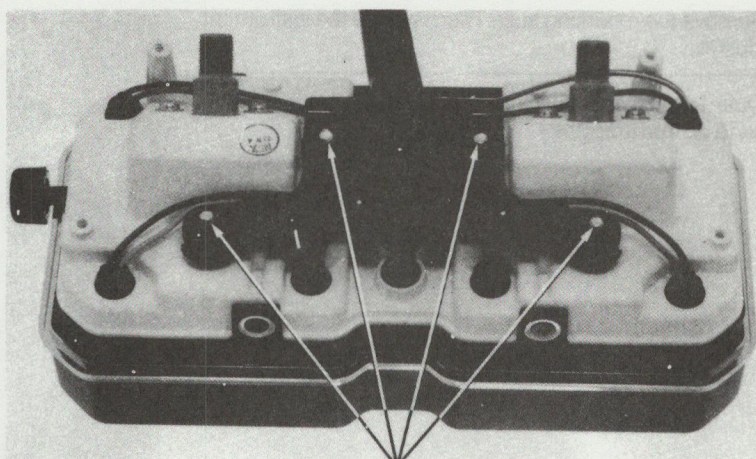
SCREWS

Remove the instrument set plate by withdrawing the two nuts.



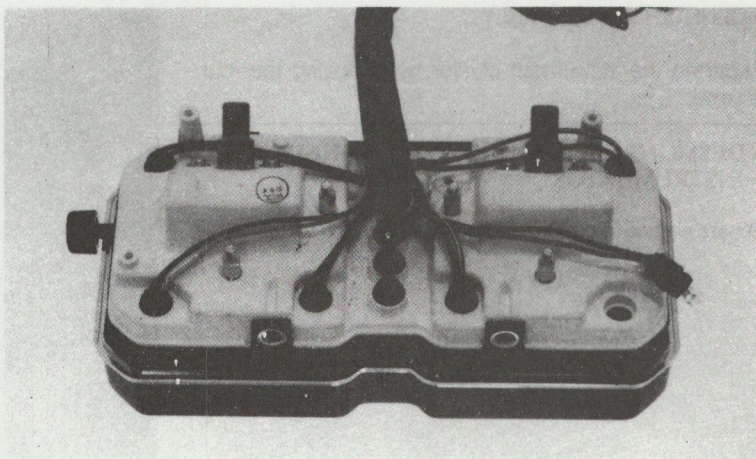
NUTS

Remove the instrument inner set plate by withdrawing the four nuts.

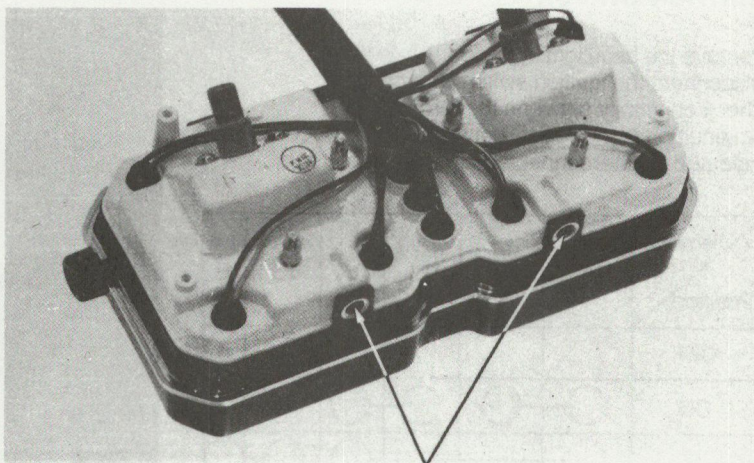


NUTS

Remove the instrument bulb socket and replace any burnt out bulbs. After installing a new bulb, check continuity. If the bulb doesn't light, inspect the wiring regarding an open or short circuit.

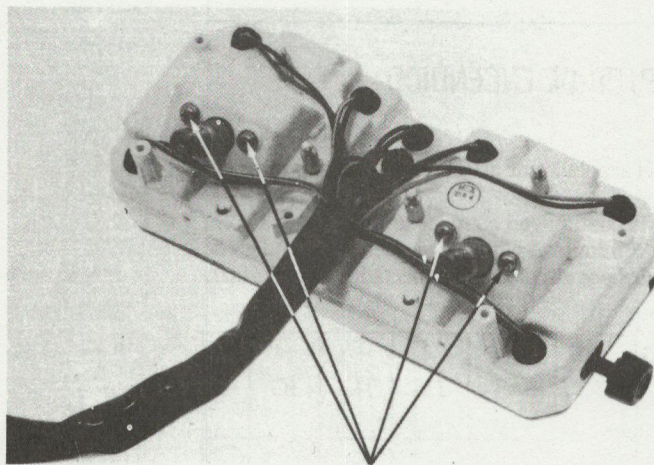


Remove the two instrument cover mounting screws at the top of the cover.



SCREWS

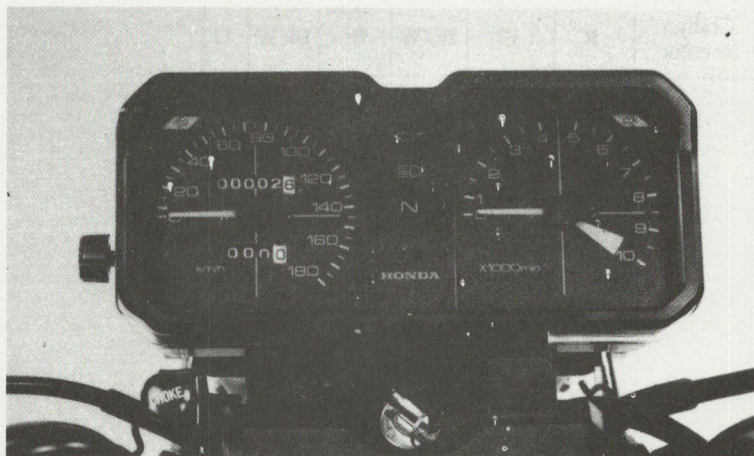
Remove the speedometer and the tachometer by withdrawing the screws.



SCREWS

INSTRUMENT ASSEMBLY/INSTALLATION

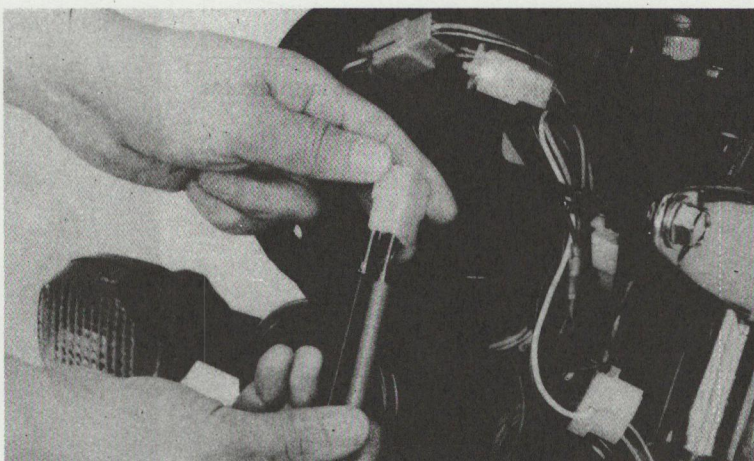
Assemble and install the instruments in the reverse order of removal.



IGNITION SWITCH

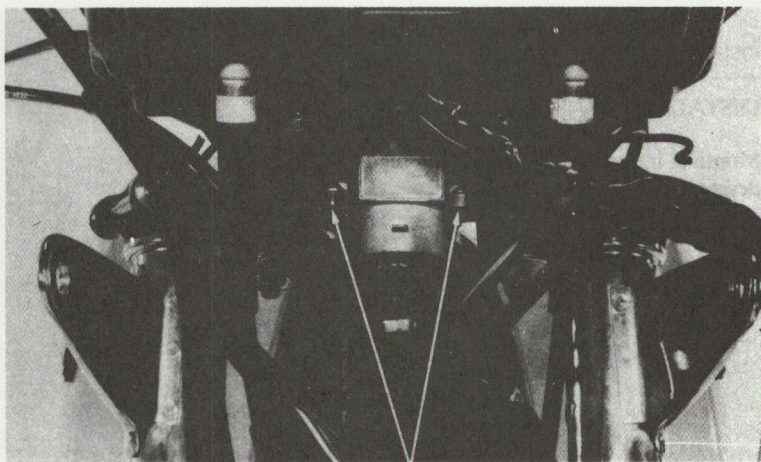
Remove the headlight.
Disconnect the ignition switch wire coupler.
Check continuity between the terminals.
Continuity should exist between color coded wires indicated by interconnected circles on the chart.

Terminal Position	BAT ₁	BAT ₂	TL ₁	TL ₂	IG	E
OFF					○	○
ON	○	○	○	○		
P	○			○	○	○
Color code	R	Bl	Br/W	Br	Bl/W	G



IGNITION SWITCH REMOVAL

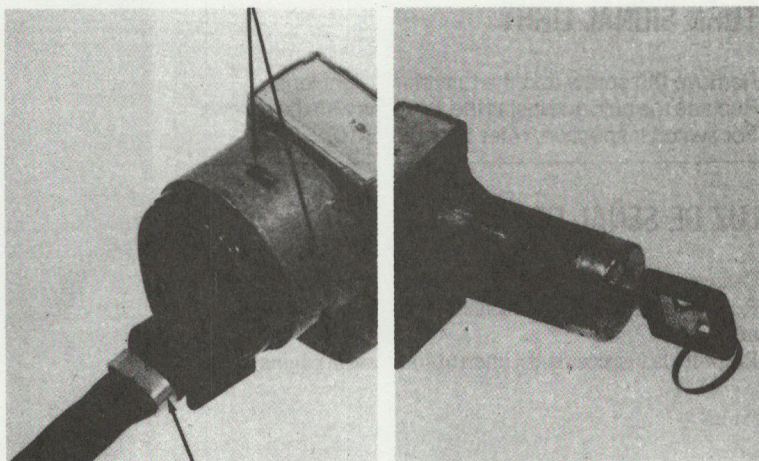
Remove the headlight.
Disconnect the ignition switch wire coupler.
Remove the ignition switch mounting bolts and the ignition switch itself.



BOLTS

LUGS/SLOTS

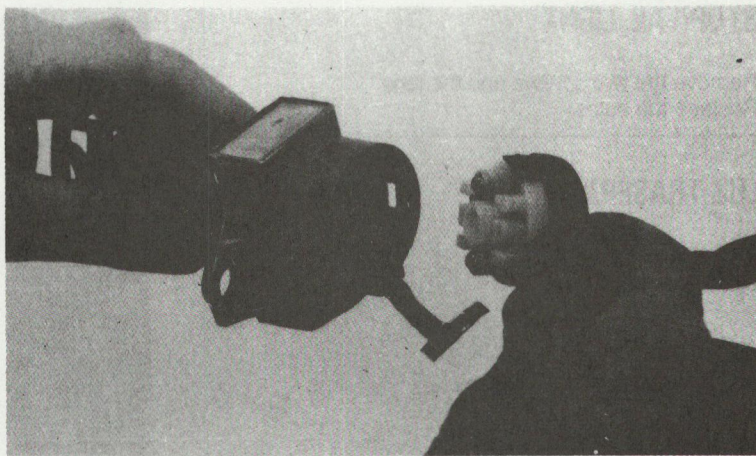
Open the wire clamp.
Insert the ignition key and turn it halfway between the ON and OFF detent positions.
Push in the lugs in the slots and pull the contact base from the switch.



WIRE CLAMP

ASSEMBLY

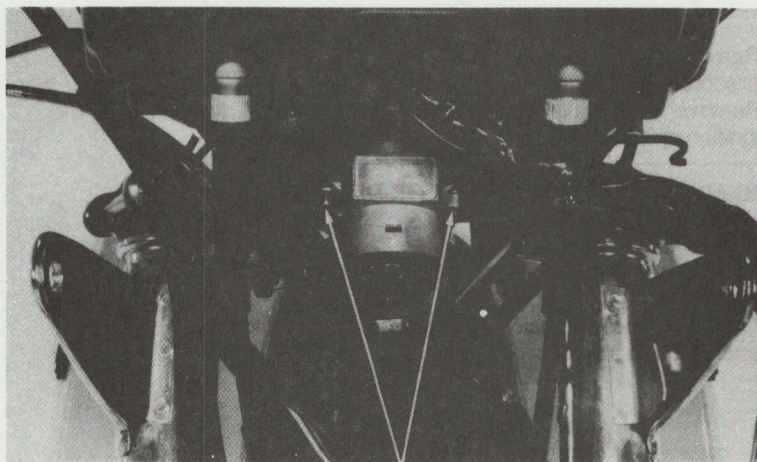
Assemble the ignition switch in the reverse order of disassembly.



SWITCHES

INSTALLATION

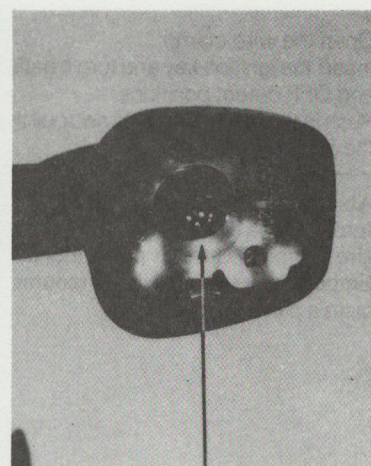
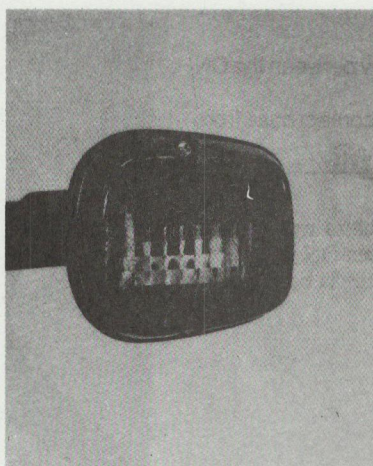
Install the ignition switch in the reverse order of removal.



BOLTS

TURN SIGNAL LIGHT

Remove the screw and the turn signal light lens.
Replace the bulb and install the light lens with the screws.
For switch inspection, refer to page 18-10.

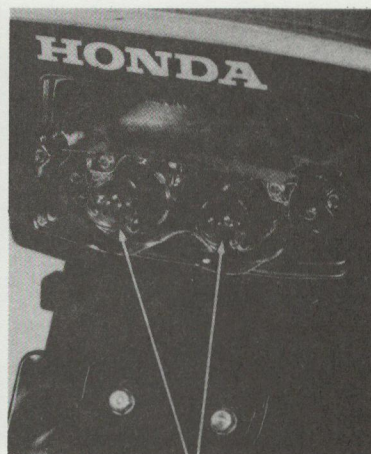
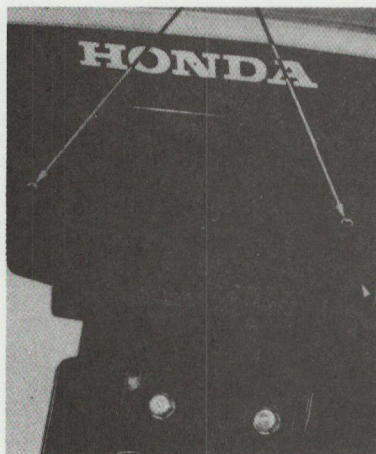


BULB

SCREWS

STOP/TAIL LIGHT

Remove the two screws and the lens.
Replace the bulbs.



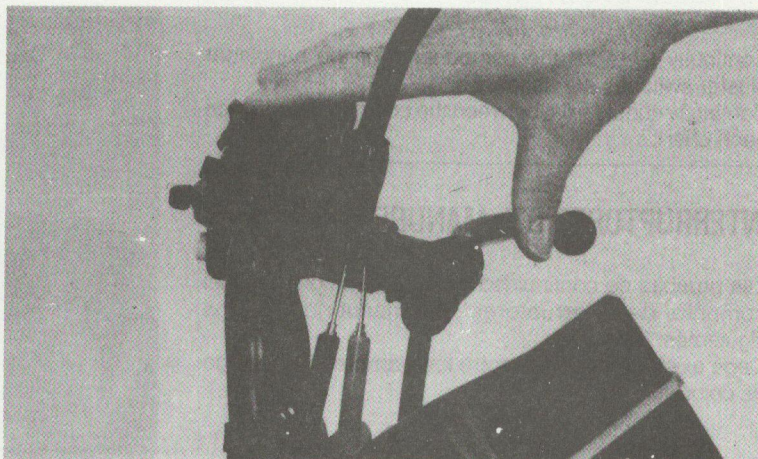
STOP/TAIL LIGHT BULBS

CLUTCH SWITCH

Disconnect the wires from the clutch switch and check them regarding continuity while applying and releasing the clutch lever.

Replace the switch if it is faulty.

CLUTCH LEVER APPLIED: CONTINUITY

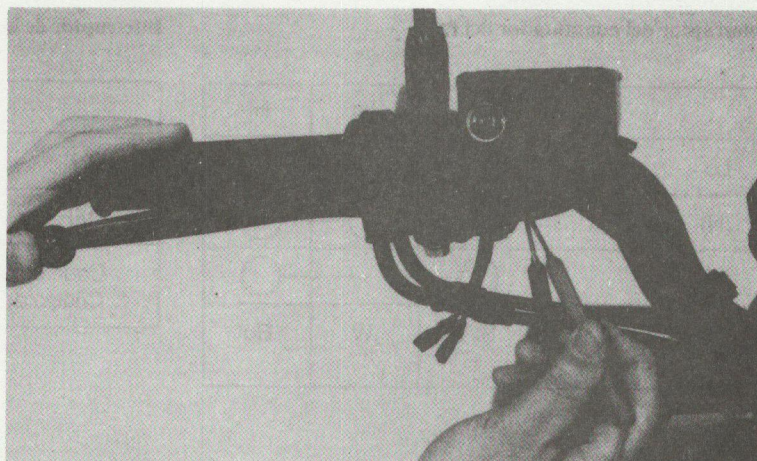


FRONT STOPLIGHT SWITCH

Disconnect the wires from the stoplight switch. Check continuity while applying and releasing the front brake lever.

Replace the switch if necessary.

BRAKE LEVER APPLIED: CONTINUITY
BRAKE LEVER NOT APPLIED: NO CONTINUITY

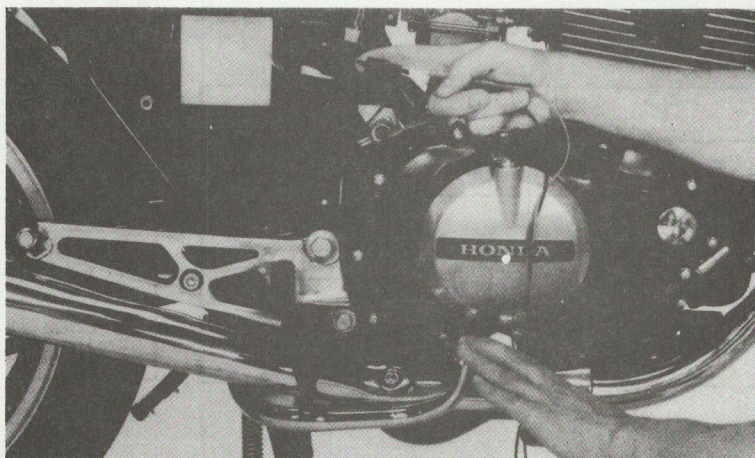


REAR STOPLIGHT SWITCH

Remove the right side cover.

Disconnect the rear stoplight coupler and check continuity between the terminals while pressing and releasing the brake pedal.

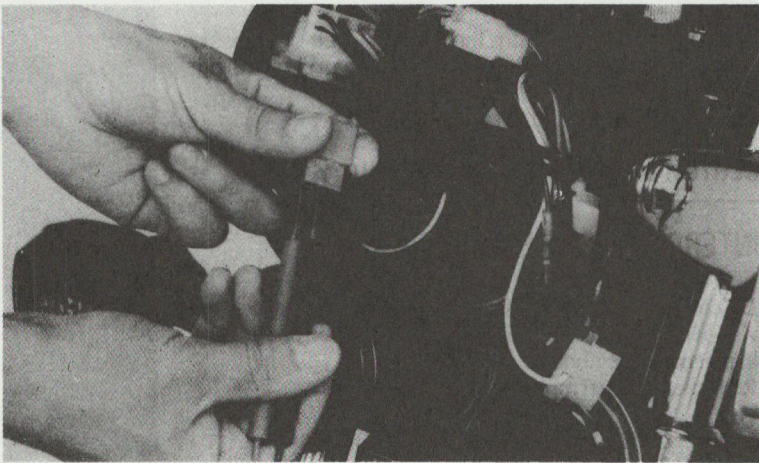
BRAKE PEDAL APPLIED: CONTINUITY
BRAKE PEDAL NOT APPLIED: NO CONTINUITY



SWITCHES

HANDLEBAR SWITCHES

Continuity tests for the components of the handlebar cluster switches are as follows:
Continuity should exist between the color coded wires on each chart.



Headlight Dimmer Switch

	HL ₂	Lo	Hi
Lo			
(N)			
Hi			
Code color	Bl/Y	W	Bu

Passing Switch

	BAT ₂	Hi
ON		
OFF		
Code color	Bl	Bu

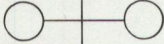
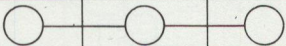
Turn Signal Switch

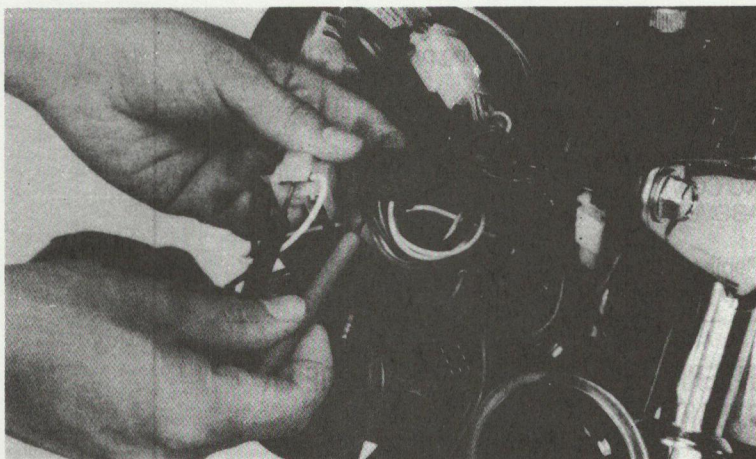
	W	R	L
R			
N			
L			
Code color	Gr	Lb	O

Horn Button

	Ho	E
Depressed		
Released		
Code color	Lg	G

Headlight Switch

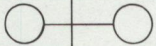
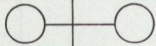
	BAT ₂	P	HL1
OFF			
P			
HL			
Code color	BI	Br/Bu	BI/R



Starter Button

	BAT ₂	Mg
FREE		
PUSH		
Code color	BI	Y/R

Engine Stop Switch

	E	IG
OFF		
RUN		
OFF		
Code color	G	BI/W

OIL PRESSURE WARNING SWITCH

Check continuity while applying pressure to the switch.

CONTINUITY:

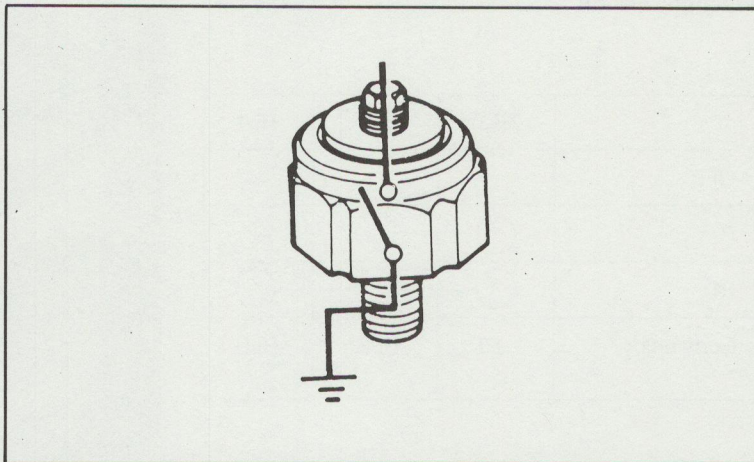
BELOW $0.3 \pm 0.1 \text{ kg/cm}^2$ ($4.3 \pm 1.4 \text{ psi}$)

NO CONTINUITY:

ABOVE $0.3 \pm 0.1 \text{ kg/cm}^2$ ($4.3 \pm 1.4 \text{ psi}$)

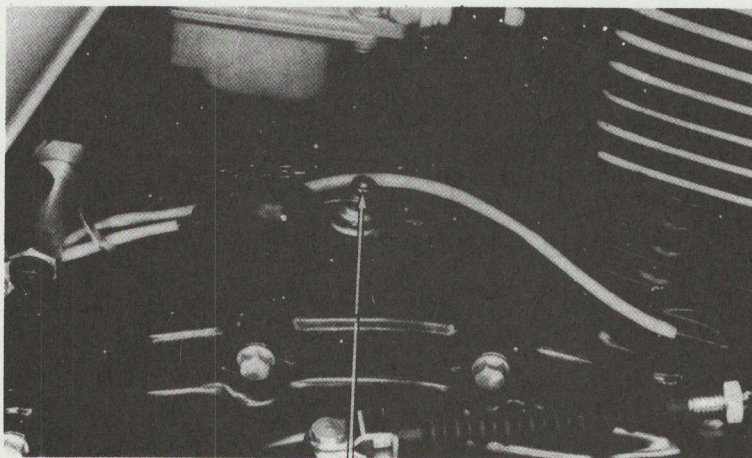
Replace the switch if necessary.

Apply a liquid sealant to the switch threads.

**NEUTRAL SWITCH**

Check the switch regarding continuity between the switch terminal (wire removed) and ground with the transmission in neutral and with the transmission in any gear.

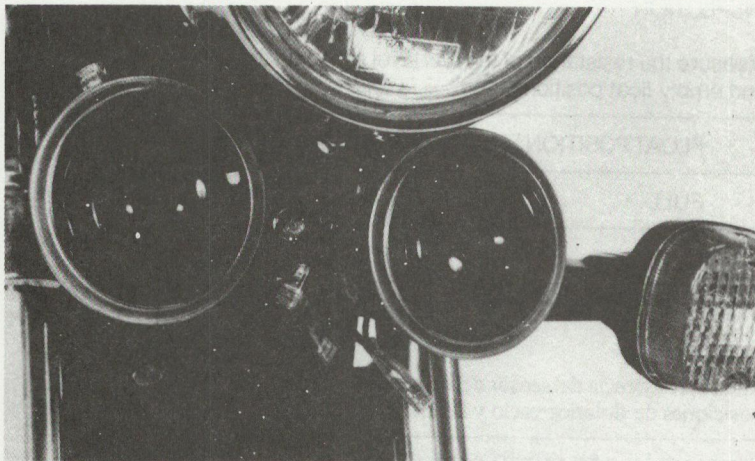
Replace the neutral switch if necessary.



NEUTRAL SWITCH

HORN

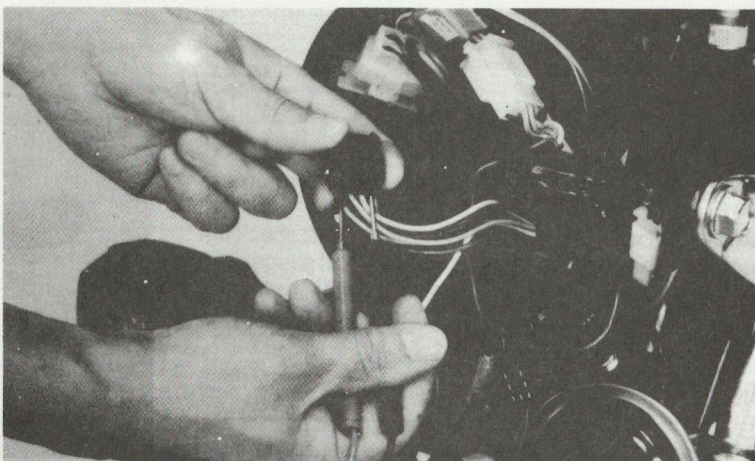
Disconnect the horn wires from the terminal.
Connect a fully charged battery to the terminals.
The horn is normal if it sounds.



Remove the headlight.
Disconnect the coupler.
Check continuity between the LIGHT GREEN and GREEN terminals.

CONTINUITY: horn button is pushed.

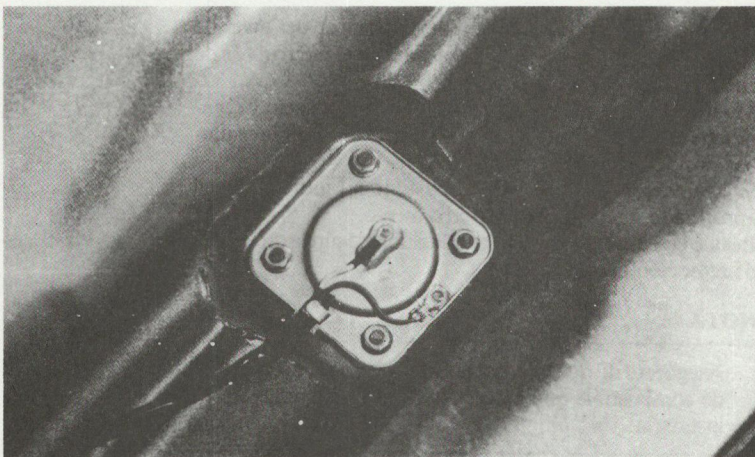
NO CONTINUITY: horn button is released.



FUEL LEVEL SENSOR

REMOVAL

Remove the fuel tank and drain the fuel.
Remove the fuel level sensor attaching nuts and fuel level sensor.

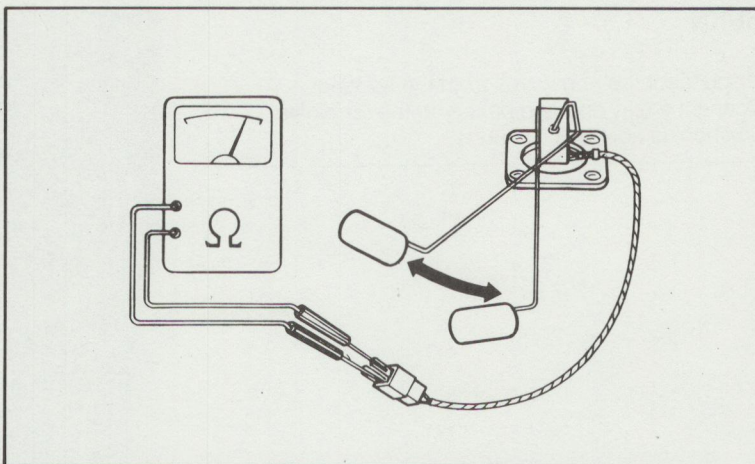


SWITCHES

INSPECTION

Measure the resistance of the fuel level sensor in the full and empty float positions.

FLOAT POSITION	RESISTANCE
FULL	4—10 Ω
EMPTY	90—100 Ω



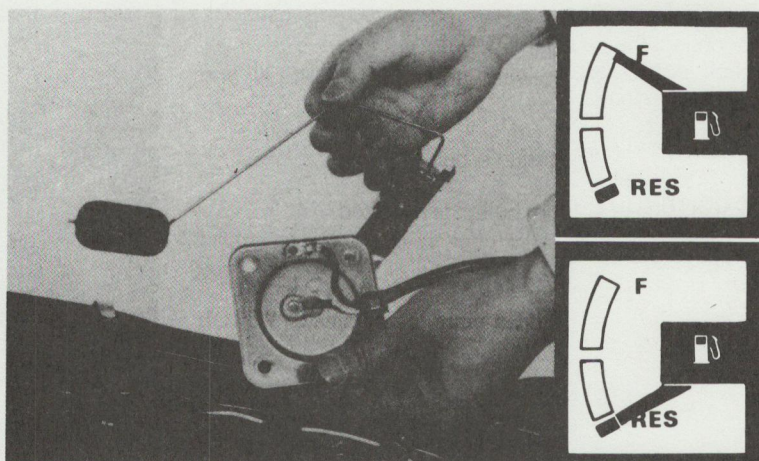
FUEL LEVEL GAUGE INSPECTION

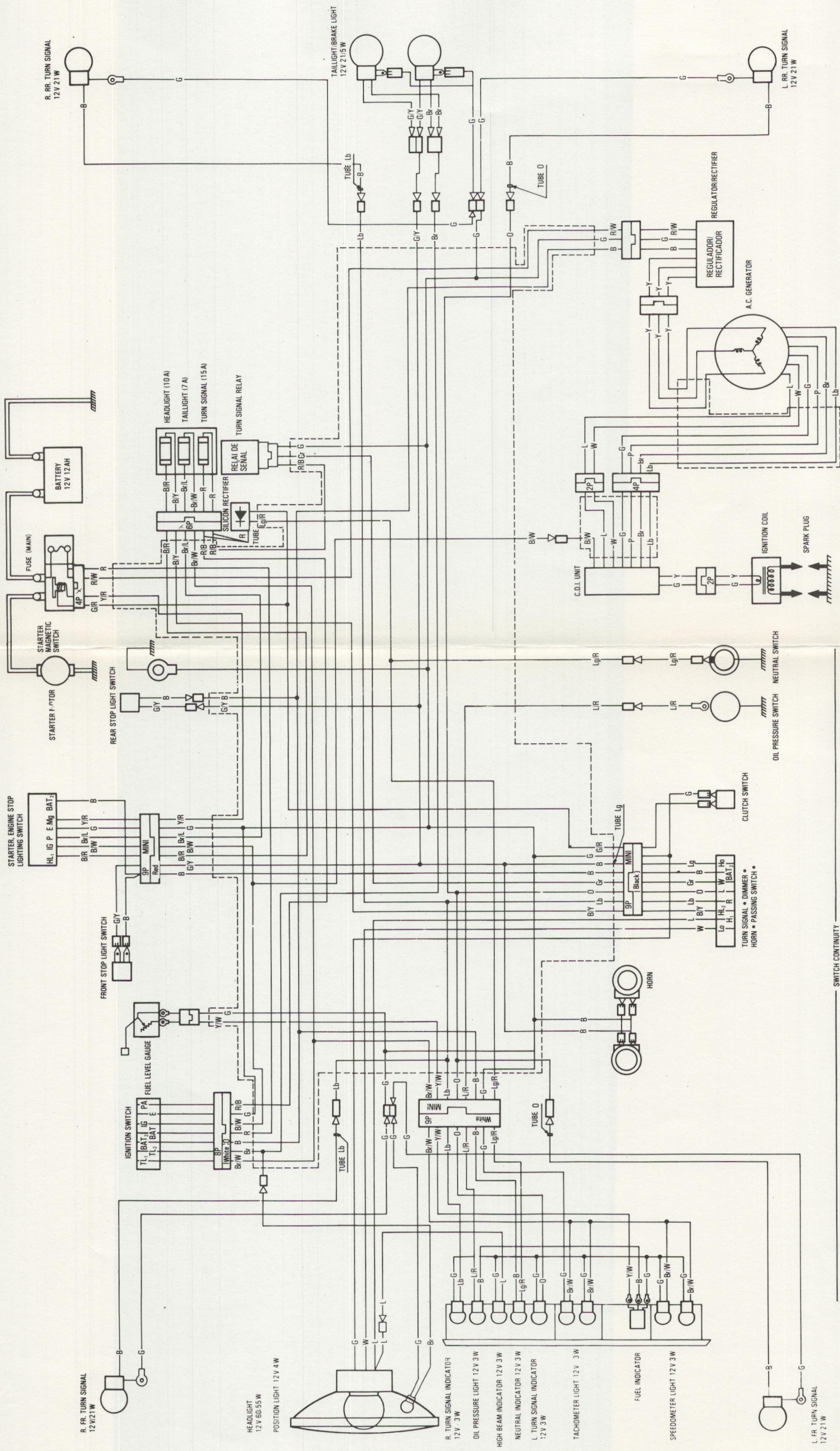
Connect the fuel level sensor coupler to the wire harness and turn the ignition switch ON.

Move the float to full and empty positions and check the fuel gauge needle in both positions. If the fuel gauge does not indicate the proper level, replace it with a new one. Install the fuel level sensor in the reserve order of removal.

NOTE

Make sure that O-ring of fuel level sensor is in perfect condition before installing it.



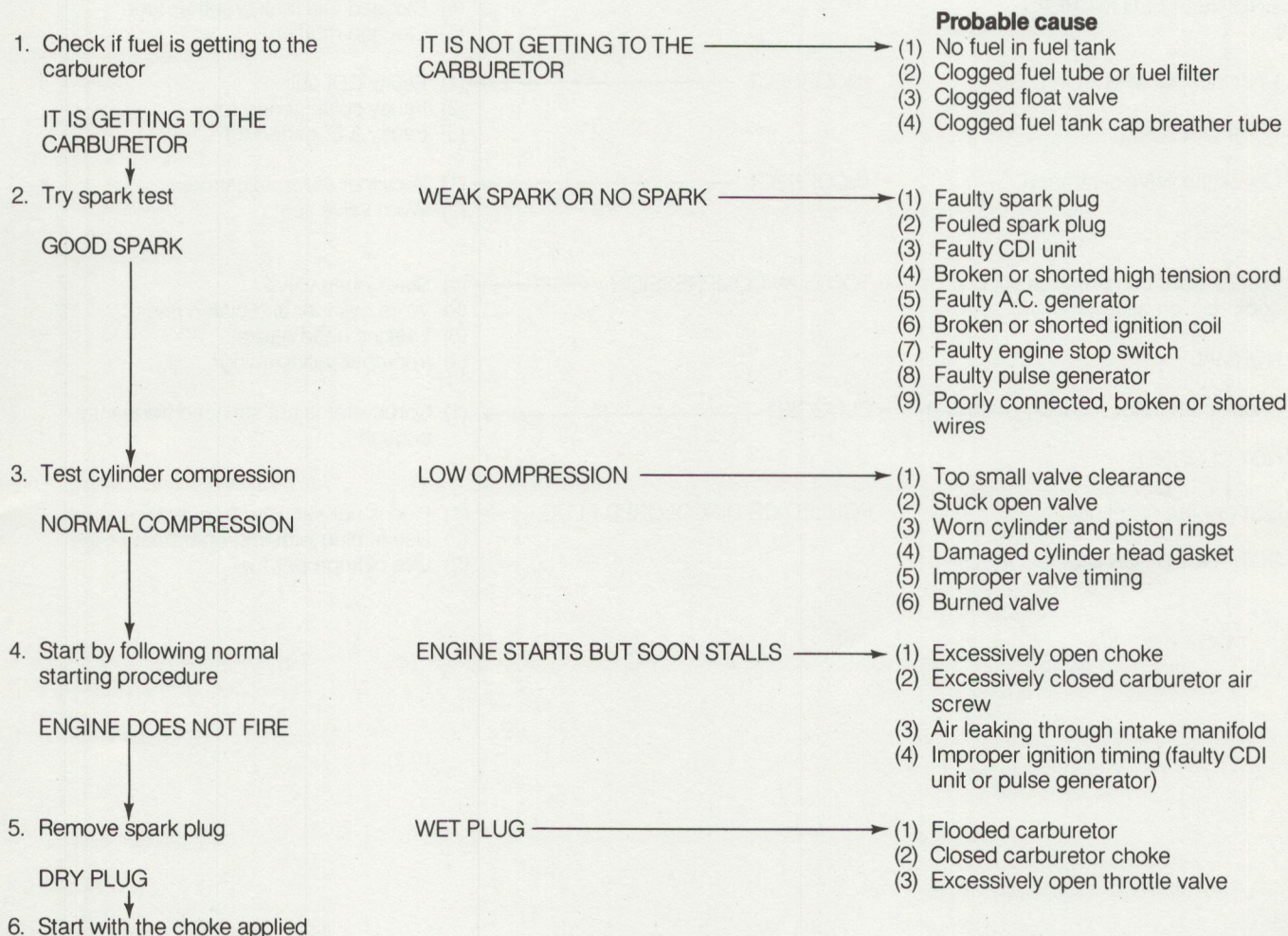


- SWITCH CONTINUITY

20. TROUBLESHOOTING

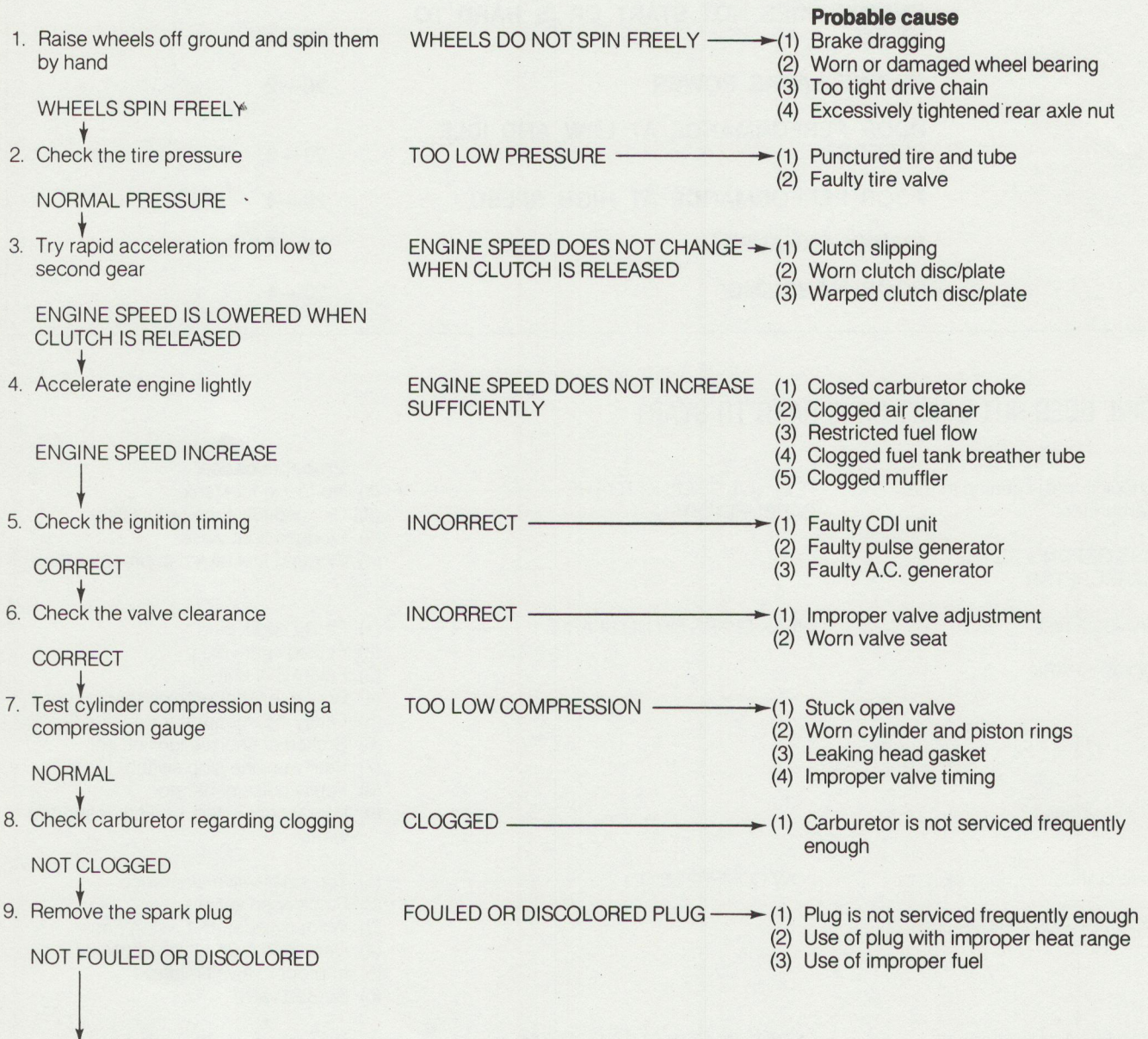
ENGINE DOES NOT START OR IS HARD TO START	20—1
ENGINE LACKS POWER	20—2
POOR PERFORMANCE AT LOW AND IDLE SPEEDS	20—3
POOR PERFORMANCE AT HIGH SPEED	20—4
SMOKY EXHAUST	20—4
POOR HANDLING	20—4

ENGINE DOES NOT START OR IS HARD TO START



TROUBLESHOOTING

ENGINE LACKS POWER



10. Remove the oil filler cap/dipstick and make sure the oil level is correct and the oil is not dirty

CORRECT ENGINE OIL LEVEL

11. Remove cylinder head cover and inspect lubrication

SUFFICIENTLY LUBRICATED VALVE TRAIN

12. Check if engine overheats

NORMAL TEMPERATURE

13. Accelerate or run at high speed

ENGINE DOES NOT KNOCK

INCORRECT OIL LEVEL

- (1) Too high oil level
- (2) Too low oil level
- (3) Contaminated oil

INSUFFICIENTLY LUBRICATED VALVE TRAIN

- (1) Clogged oil passage
- (2) Clogged oil tube

OVERHEATED ENGINE

- (1) Excessive carbon build-up in combustion chamber
- (2) Use of improper fuel
- (3) Clutch slipping
- (4) Too rich fuel air mixture

ENGINE KNOCKS

- (1) Worn piston and cylinder
- (2) Too lean fuel air mixture
- (3) Use of improper grade of fuel
- (4) Excessive carbon build-up in combustion chamber
- (5) Too advanced ignition timing (faulty CDI unit)

POOR PERFORMANCE AT LOW AND IDLE SPEEDS

1. Check the ignition timing and the valve clearance

CORRECT

2. Check carburetor pilot screw adjustment

CORRECT

3. Check if air is leaking through intake manifold

NO LEAKING

4. Try spark test

GOOD SPARK

INCORRECT

Probable cause

- (1) Improper valve clearance
- (2) Improper ignition timing (faulty CDI unit)

INCORRECT

- (1) Too lean fuel air mixture (To correct, screw in)
- (2) Too rich fuel air mixture (To correct, screw out)

LEAKING

- (1) Deteriorated insulator O-ring
- (2) Loose carburetor

WEAK OR INTERMITTENT SPARK

- (1) Faulty, carbon or wet fouled spark plug
- (2) Faulty CDI unit
- (3) Faulty A.C. generator
- (4) Faulty ignition coil
- (5) Faulty pulse generator

POOR PERFORMANCE AT HIGH SPEED

1. Check the ignition timing and the valve clearance

CORRECT

2. Disconnect the fuel tube at carburetor

FUEL FLOWS FREELY

3. Remove carburetor and check the regarding clogging jet

NO CLOGGING

4. Check valve timing

CORRECT

5. Check valve spring tension

NOT WEAK

INCORRECT → (1) Improper valve clearance
(2) Faulty C.D.I. unit
(3) Faulty pulse generator
(4) Faulty A.C. generator

RESTRICTED FUEL FLOW → (1) Lack of fuel in tank
(2) Clogged fuel line
(3) Clogged fuel tank cap breather
(4) Clogged fuel valve

IT IS CLOGGED → (1) Clean it

INCORRECT → (1) Cam sprocket is not installed properly

WEAK → (1) Faulty valve spring

SMOKY EXHAUST

1. Ride the motorcycle for sometime at high engine speed

THIN SMOKE IS EMITTED

2. Return the throttle grip quickly

BLACK SMOKE IS EMITTED → (1) Worn cylinder and piston rings
(2) Too high oil level
(3) Badly positioned rings
(4) Faulty piston or rings
(5) Damaged cylinder head

WHITE SMOKE IS EMITTED → (1) Worn valve stem and guide
(2) Excessive play between the valve guide and the valve

POOR HANDLING → Check the tire pressure

- | | Probable Cause |
|---------------------------------------|--|
| 1. Steering is heavy → | (1) Too tight steering head adjuster
(2) Damaged steering cone races or steel balls |
| 2. Either wheel is wobbling → | (1) Excessive wheel bearing play
(2) Distorted rim
(3) Improperly installed wheel hub
(4) Excessively worn swingarm pivot bushing
(5) Distorted frame
(6) Improper drive chain tension or adjustment
(7) Loose swingarm pivot bolt
(8) Loose engine hanger bolt |
| 3. The motorcycle pulls to one side → | (1) Misadjusted shock absorber
(2) Front and rear wheels not aligned
(3) Bent front fork
(4) Bent swingarm |

